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The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

Published Every Thursday TULSA, OKLAHOMA, MARCH 13, 1930 $6.00 a Year

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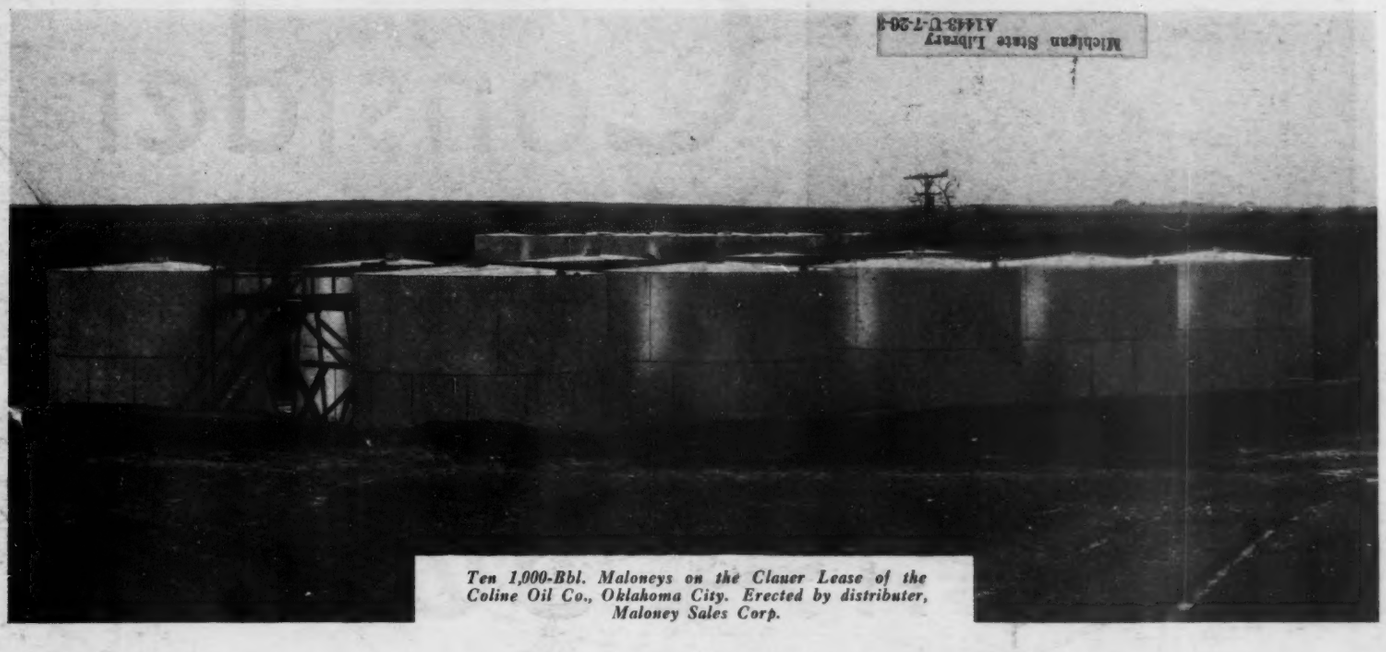

Ten 1,000-Bbl. Maloneys on the Clauer Lease of the Coline Oil Co., Oklahoma City. Erected by distributer, Maloney Sales Corp.

By eliminating the waste of gasoline-laden vapors caused by the breathing of lease tanks, Maloney Vapor-Pressure Tanks add both to the volume and the gravity of oil delivered to the pipe line . . . They soon pay for themselves!

MADE OF AMERICAN STEEL

Maloney A.P.I. Bolted Steel Tanks conform with A.P.I. dimensional standards and carry the official A.P.I. monogram.

"Alone in Quality"
MALONEY TANK MFG. CO.
Tulsa, Okla., U.S.A.
Distributers at All Principal Petroleum Points

MALONEY

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

Advertisers' Index on Page 41 Table of Contents on Page 42

Consider Your *cost* OF Balls & Seats

DO YOU PAY $ .55 OR $55.00 OR $5.00 ?

The cost of a ball and seat at the supply store averages about 55c.

If, at the end of twenty days, the ball and seat fails, a pulling job is caused, that might cost in labor and lost production approximately $18.15.

In another twenty days' period this same cost must be again figured.

Then a third job is caused, costing another $18.15.

Therefore, it is evident that if the balls and seats are not the proper type that will give sustained performance, the actual cost of each ball and seat during the given period of time easily amounts to $55.00.

Consequently, it is vitally essential that you select the most durable ball and seat, made of suitable materials, properly heat-treated and accurately finished. The resultant cost over a period of time, including labor of installation, will be around $5.00.

It is the average run of hundreds of balls and seats that counts. In the production of Axelson Balls and Seats extreme measures are taken in the heat treatment to get the most out of the best material.

Axelson's special care and practice is more than justified by the fact that the ultimate cost to the user of this pumping equipment averages approximately one-tenth that of ordinary balls and seats.

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P. O. Box 337, Los Angeles

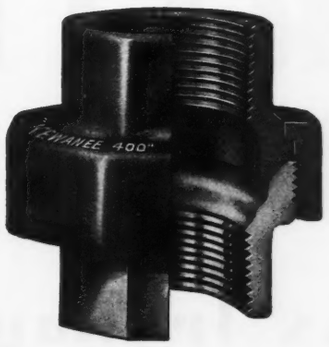
Tulsa St. Louis

New York City, 30 Church St.

Mid-Continent and Eastern Distributors

Frick-Reid Supply Corporation

AXELSON BALLS & SEATS



THE
KEWANEE 400 UNION

Specify
WALWORTH
VALVES
FITTINGS
AND TOOLS
for

OIL

GET BEHIND PROSPERITY

Keep industry going. ● Every kind of business can help in the national effort to maintain prosperity on its present high level. ● How? By putting into effect NOW long-delayed plans for improvements in plant equipment, for new building, for reconditioning. ● In every industry the piping system is of first importance. ● But its life and service are limited by the quality of the valves and fittings that control the flow of its contents. ● For dependable service under severe operating conditions, insist upon Walworth valves and fittings. ● We make the complete line and a Walworth distributor can supply all your needs.●

THE KEWANEE 400 UNION

The one union that won't "freeze" on the line. ● Its forged-steel to forged-bronze thread connection simply can't corrode. ● A turn of a wrench on the ring does the trick . . . any time. ●

WORKING PRESSURE RATINGS

Service	Working Pressure	Temp.
Kewanee 400 Union		
1/8" to 3" Steam	400 lbs.	500° F.
Cold Oil, Water or Gas (Non-Shock)	2000 lbs.	100° F.
Kewanee Union (Malleable Ring)		
3 1/2" and 4" Steam	200 lbs.	450° F.
Cold Oil, Water or Gas (Non-Shock)	500 lbs.	100° F.

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Walworth Company, General Sales Offices: 60 East 42nd St., New York
Plants at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa.; and Attalla, Ala.
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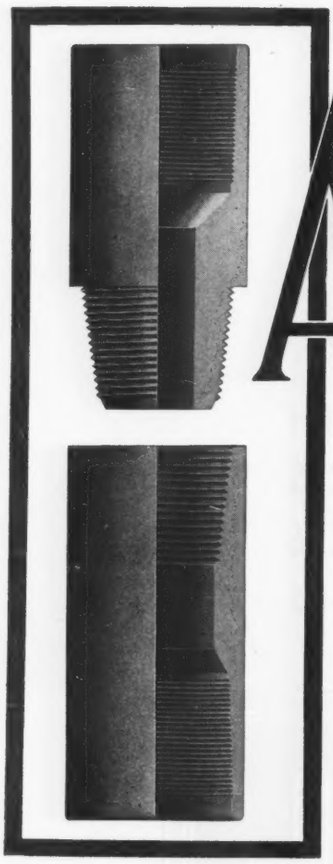
. . . Distributors in Principal Cities of the World . . .

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Okla., under the Act of March 3, 1879.



ACCURATE THREADING

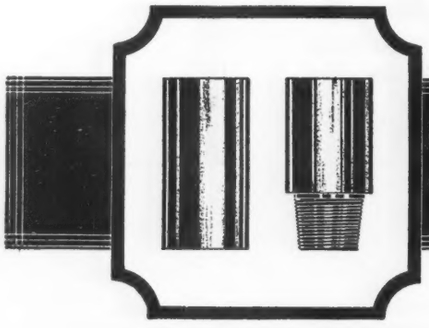
—gives less leakage

—assures greater pressure

—and coupled with the greater tensile strength of SPENGLER HEAT-TREATED TOOL JOINTS assures most efficient service possible in deep well drilling.

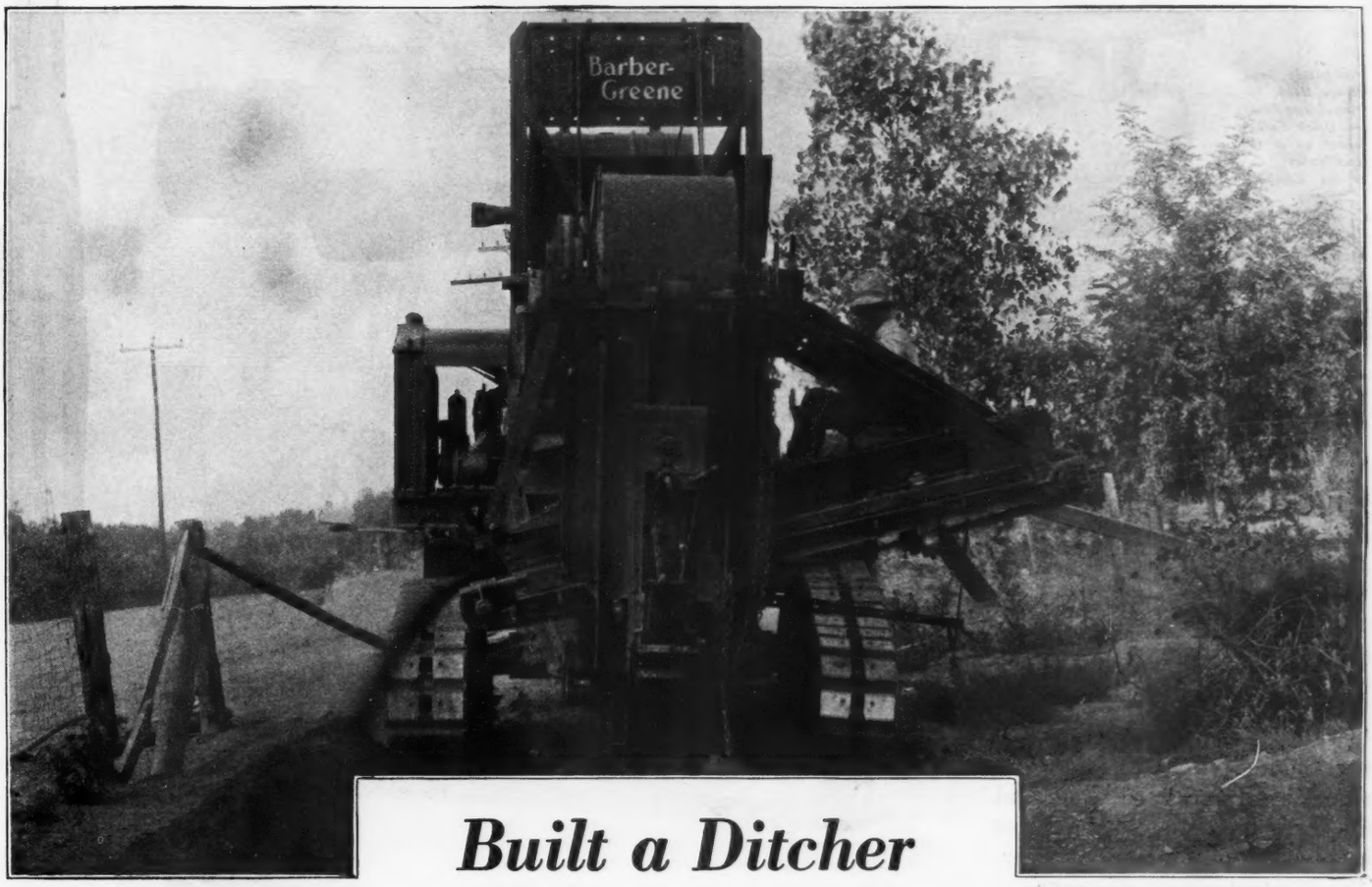
SPENGLER TOOL JOINTS Meet A. P. I. Specifications

From the crucible of the steel furnace to the rig in the field Spengler Tool Joints follow a scientific manufacturing treatment—that's why dependable drillers are recommending them.



SPENGLER TOOL CO.
OKLAHOMA CITY, OKLAHOMA
SPENGLER TOOL JOINTS MEET A.P.I. SPECIFICATIONS

"Those Crazy Fellows" Out in Aurora, Ill.



Built a Ditcher

Five years ago, this man Barber and his cohorts, out in Aurora, Illinois, built a strange new digging machine with a vertical boom and other strange unheard-of "gadgets."

The machine weighed and cost about one-third as much as the colossal collections of whirling machinery known as ditchers in those days.

"Those fellows are crazy even to try to build a ditcher like that," said the wise ones—just as they called Fulton crazy when he built his steamboat.

But the strange digging machine ran away from the ungainly big machines on the straightaway. And it cut through the tough spots that had always been relegated to hand labor before.

Daily digging footages went soaring. Costs per foot dropped straight down. Entire gangs were replaced by this one machine and its operator.

Those "crazy fellows" out in Aurora, Ill., are still putting "crazy notions" into digging machines.

From their original vertical boom machine, they've designed a ditcher for oil-field digging. They call it the Pipe Line Special.

And it does strange things.

We hear of it going through macadam and coral rock. We hear of it romping through caliche and clay.

We watch it pick its way carefully through a maze of underground pipe and conduit—never harming one.

Yet we see it chop through roots and rocky ground.

We constantly get tales of unusual performance—of close holding to line and grade—of surprising weekly pipe-line mileage—of new low digging costs.

So we've prepared a book to give you an idea of what these strange machines, built by "those crazy fellows" out in Aurora, Ill., do to pipe-line ditching and costs.

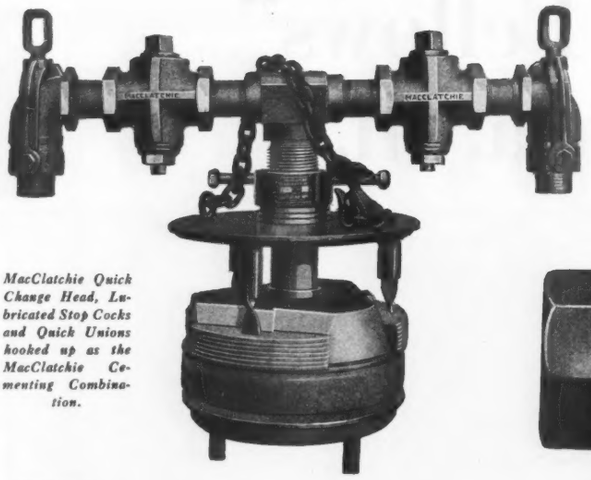
The book's title is: "Ditching Snapshots and Records." A post card brings your copy to you.

BARBER GREENE

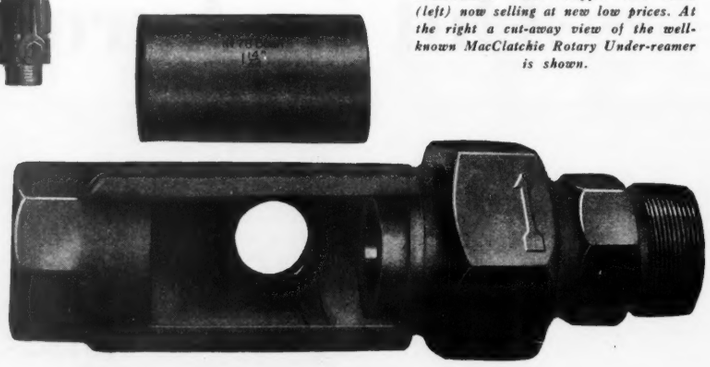
STANDARDIZED MATERIAL HANDLING MACHINES

BARBER-GREENE COMPANY, 600 WEST PARK AVENUE, AURORA, ILLINOIS

PIPE LINE SPECIAL



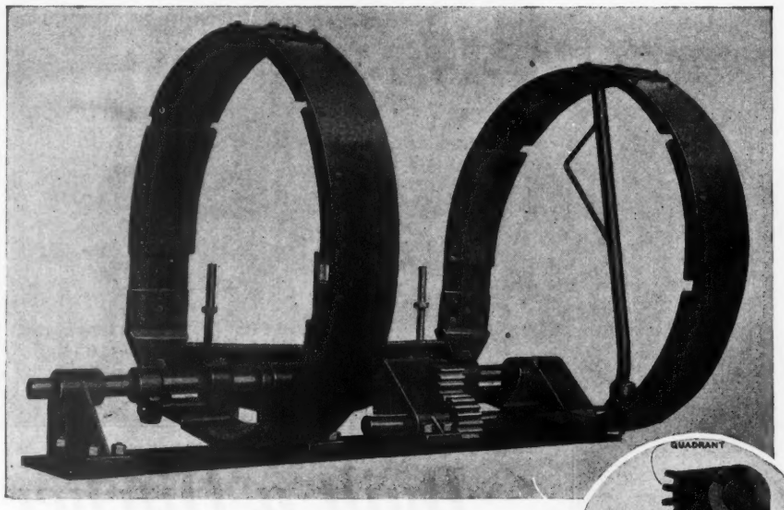
MacClatchie Quick Change Head, Lubricated Stop Cocks and Quick Unions hooked up as the MacClatchie Cementing Combination.

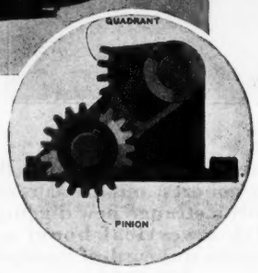


MacClatchie Flow Nipple and Bean (left) now selling at new low prices. At the right a cut-away view of the well-known MacClatchie Rotary Under-reamer is shown.

This page deserves 15 minutes of any oil man's day

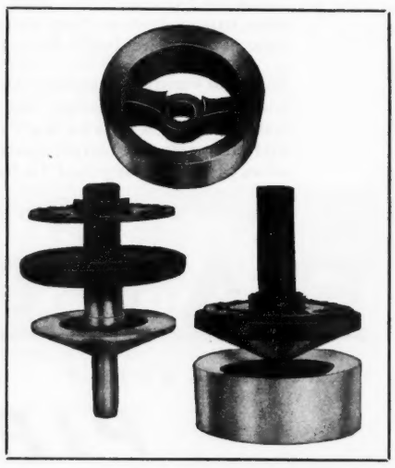
Careful consideration of a picture should tell you, as an experienced oil man, a good deal about the fundamental principles involved in an oilfield specialty. The illustrations on this page . . . each one of which plainly shows the simple principle on which the design is based . . . are enough, we believe, to indicate the practicality and efficiency of MacClatchie specialties. Clip the coupon for further information.





Rear view of the MacClatchie GEARED Brake for draw-works, the first successful brake of its kind. A side view of the gears is shown at the right.

The famous MacClatchie Valve is shown at the right. There are more MacClatchie Mud Pump Valves sold than any other make. Quality is responsible! Stocked by all Mid-Continent Continental Supply Stores.



OG-3-30

MacClatchie Manufacturing Co.,
Compton, California

Gentlemen:
Please send me information on the items checked below:

Automatic Safety Catheads — Geared Brakes — Rotary Under-reamers
Mud Pump Valves — Quick Unions — Stop Cocks — Quick Change Heads
Flow Nipples — Valve Seat and Pump Liner Pullers — Pump Pistons
MacClatchie "Panther" Aircraft Engines

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IT takes *courage* to be first—and *ability* to stay there. KEYSTONE was the *first copper alloy steel to be produced.* It gives maximum rust-resistance for tanks and sheet metal work in the oil fields.

KEYSTONE COPPER STEEL

IS UNEXCELLED

For Tanks, Barrels and Drums

AND FOR ROOFING AND SIDING

Used by prominent tank and drum manufacturers. Sold by leading sheet metal merchants. Send for ANTI-CORROSIVE METAL booklet.

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UNIVERSAL ATLAS CEMENT COMPANY

Pac. Coast Distributors—United States Steel Products Co.—Columbia Dept., San Francisco, Los Angeles, Portland, Seattle, Honolulu. *Export Distributors*—United States Steel Products Co., New York city

Think of the Purchase Cost as Rent for the Valve's Life-

Darling Valves cost the least per year ~ ~ ~

You pay more for the Darling Valve than you do for others—granted. But—certainly it is performance over a long period of time that you want. If you divide the great number of years of service in the Darling Valves by their cost you will find the Darling Valve gives you the best performance at a decidedly lower yearly expense.

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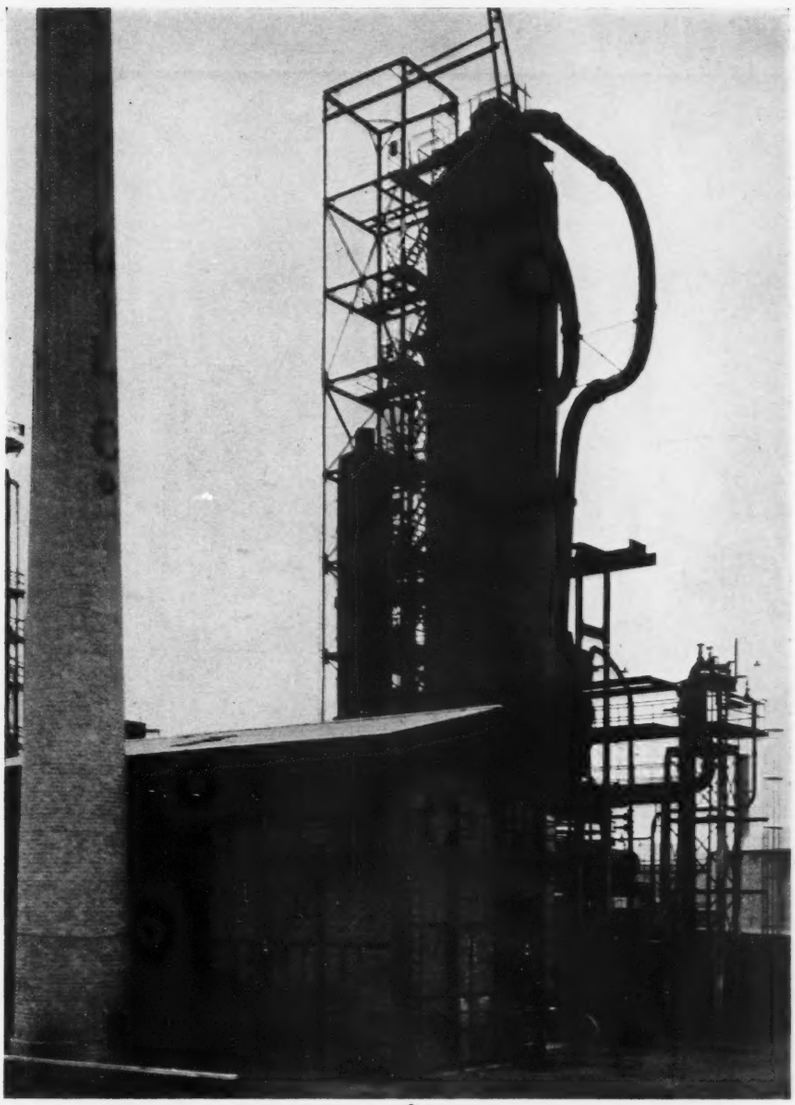
New York Chicago Oklahoma City Houston
Mid-Continent Distributors:
Frick-Reid Supply Corp. International Supply Co.
Petroleum Supply Co.
Foreign Sales Manager:
H. M. Hein, Room 1405, 152 West 42nd Street, New York

DARLING GATE VALVES



Complete Distillation

The extensive experience in the design and erection of complete refining units places the Foster Wheeler Corporation in a position to effectively serve your distillation requirements.

Illustrated above is a compact, two stage, atmospheric-vacuum refinery unit designed, built and erected by Foster Wheeler. It has the capacity of 5,000 barrels of crude per day. Kerosene, gas oil, and five lubricating stocks of various viscosities are continuously recovered to specification.

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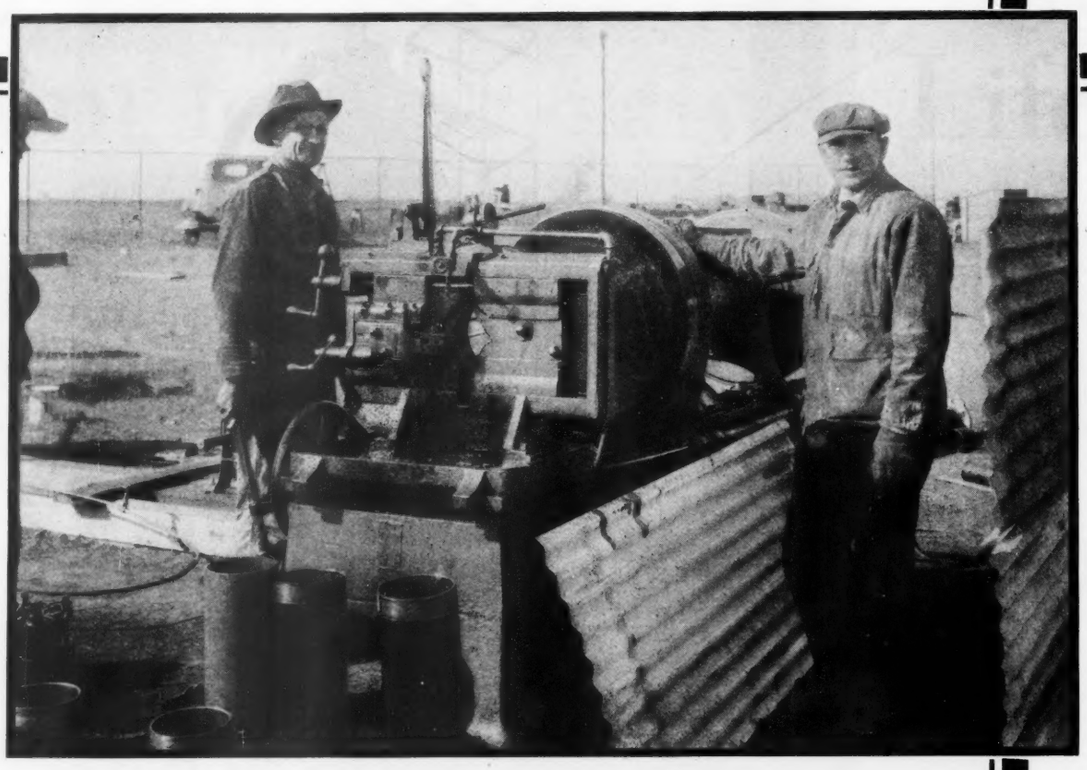
FOSTER WHEELER



Shell Petroleum Corp., Oklahoma City, Okla.

These boys can give you the "lowdown" on pipe threading

HERE is a Bignall & Keeler Threading Machine that went into service for the Shell Petroleum Corp. 7 years ago—1922. Every one of those 7 years it has been used on a different new plant job, and here it is in 1929 still on the job down at Oklahoma City turning out perfect work, and making no fuss about it.

These boys can tell you how easy a B & K is to handle, how quick and accurate to change, how it seems to thrive on hard work and punishment.

Let us send you our catalog. One of the 17 different types of B & K machines is certain to fit your need.

PEERLESS B&K DUPLEX P.D.Q.

Bignall & Keeler Machine Works
of the N. O. Nelson Mfg. Co.
Edwardsville, Ill.

OGJ 3-13-Gray

Illustrated above is one step in the making of a Halliburton Cement Mixer in the company's shops.

In oil well cementing s-p-e-e-d is the indispensable factor, the essential "ingredient." When Halliburton entered the field no mixing method was fast enough to provide the SAFETY factor desired. Accordingly, an entirely new principle of cement mixing was devised—a type of mixer which provides not only the fastest known method of mixing cement and water but one which introduces a new degree of mixing *efficiency*. The Halliburton mixer is used only in the Halliburton Process.

HALLIBURTON

OIL WELL CEMENTING CO.

Duncan, Oklahoma

To keep abreast of drilling methods, it is necessary to keep abreast of cementing developments. THE CEMENTER—filled with interesting information—will be sent gratis as issued on receipt of the coupon.

Halliburton Oil Well Cementing Co.
Dept. OG, Duncan, Oklahoma.

Without cost or obligation, please place my name on the list to receive THE CEMENTER regularly as issued.

Name _____

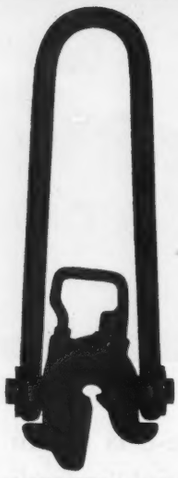
Company _____

Address _____

Speed

SAFETY..... EFFICIENCY

"Oilwell" Hercules Sucker Rods



"Oilwell" Speed Sucker Rod Elevator

An "Oilwell" Safety Sucker Rod Hook, an "Oilwell" Speed Sucker Rod Elevator and "Oilwell" Hercules Sucker Rods make an installation that operates with maximum efficiency, speed and safety. The Hook is heavy enough to handle the longest string of sucker rods and will not open until the automatic locking device is released by hand.

IT'S FROM "OILWELL"

The body of the "Oilwell" Elevator is reversible. Bail supports are part of the body and there is no complicated mechanism such as toggle, hinges, etc. Sand or paraffin cannot clog the protected locking pins.

"Oilwell" Sucker Rods conform to A. P. I. standards. Each rod is upset and made from one piece of weldless steel—heat treated. Furnished in two styles—box and pin, or pin and pin with coupling.

For further information inquire at any "Oilwell" branch store.

"Oilwell" Safety Sucker Rod Hook

OIL WELL SUPPLY CO.

NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

In But a Few Hours—
you can have either man or machine

That is the service this organization can render you.

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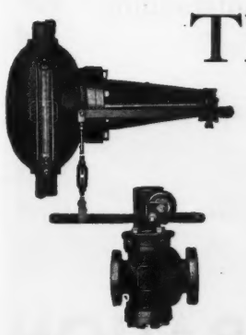
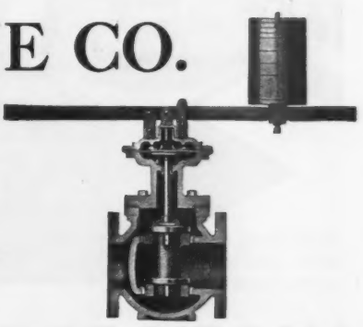


THE MOORLANE CO.

TULSA, OKLAHOMA

Telephone 9412



It's a live wire organization of young bucks with a world of oil field experience and free from haywire.

And they are the headquarters for the famous

Mason Regulators STOCKED IN TULSA.

None Better-None Equal

and **LIQUID LEVEL CONTROLS**

WHEREVER
THERE'S OIL*
For instance, in the Oklahoma City Field, one of the best equipped oil fields in the world, Lucey Equipment has brought in many of the outstanding wells.

LUCEY PRODUCTS CORPORATION

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224 EAST BRADY STREET, TULSA, OKLAHOMA

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•. • • INTO THE FAR PLACES OF THE WORLD

Reed Rock Bits and Reamers have ever followed the exploring geologist. In Canada, Mexico, The Dutch East Indies, India, Iraq, Roumania, Russia, Columbia, Venezuela and in every rotary field "in the States", operations will testify as to the

SPEED—ECONOMY
DURABILITY

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Model 29 Reed Rock Bit complete with Double Three-Point Reamer.

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REED ROLLER BIT CO.

Los Angeles, Calif., 1317 Esperanza St., **HOUSTON, TEXAS** New York City, N. Y., 150 Broadway

Another Advance In Welding Blowpipe Design

WITH the introduction of the new Type W-17 Welding Blowpipe, Oxweld again raises the standards of blowpipe performance.

New principles are incorporated — valuable old principles refined. The result is an entirely new general utility oxy-acetylene welding blowpipe.

The W-17 is light in weight and perfectly balanced. It enables continuous welding without fatigue. It will not backfire. It provides intense heat over a greater area. The goose-neck head facilitates welding in difficult positions.

The W-17 incorporates, of course, the Oxweld low pressure injector principle—assuring maximum economy and efficiency.

Examine the new W-17 carefully at the first opportunity. Write today for detailed information.

OXWELD

WELDING AND CUTTING APPARATUS AND SUPPLIES

Reliable, Economical, Long Lived—
Typically Oxweld

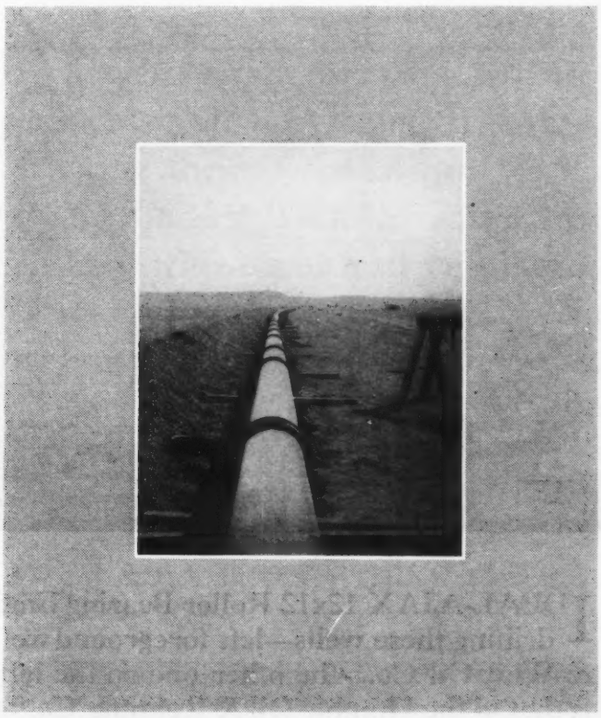
OXWELD ACETYLENE COMPANY

Unit of Union Carbide UCC *and Carbon Corporation*

NEW YORK

SALES OFFICES IN PRINCIPAL CITIES
IN CANADA: DOMINION OXYGEN CO., LTD., TORONTO

CONSTRUCTORS OF PIPE LINES OF ANY SIZE, TYPE OR LENGTH



ANNOUNCING

The expansion
and removal of our offices to the

Exchange Bank Building

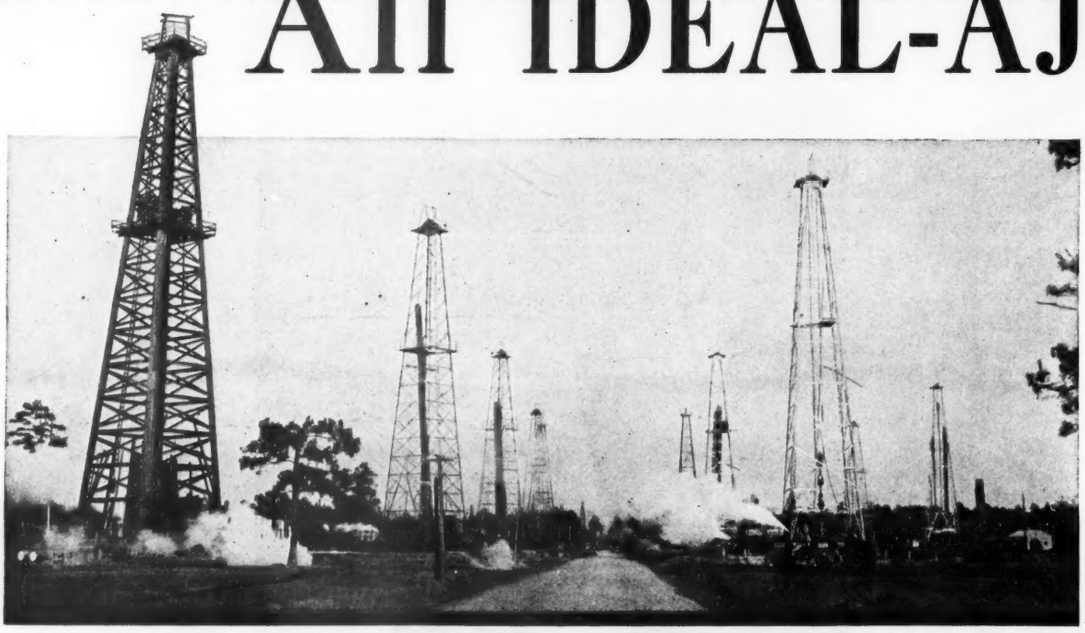
The facilities of this organization are ever increasing for efficient service in pipe line construction in all its phases.

Williams Brothers, Inc.

PIPE LINE CONTRACTORS

Tulsa, Oklahoma

All IDEAL-AJAX



IDEAL-AJAX 12x12 Roller Bearing Engines were used in drilling these wells—left foreground well is that of Cullen & West Oil Co.—the other one on the left side of the road is that of the Humble Oil & Refining Co.—and on the right side of the road, the Texas Co.

100% IDEAL-AJAX equipment—100% performance. In fact, about 70% of all the steam drilling operations in the country are taken care of by AJAX and IDEAL-AJAX Engines.

IDEAL-AJAX

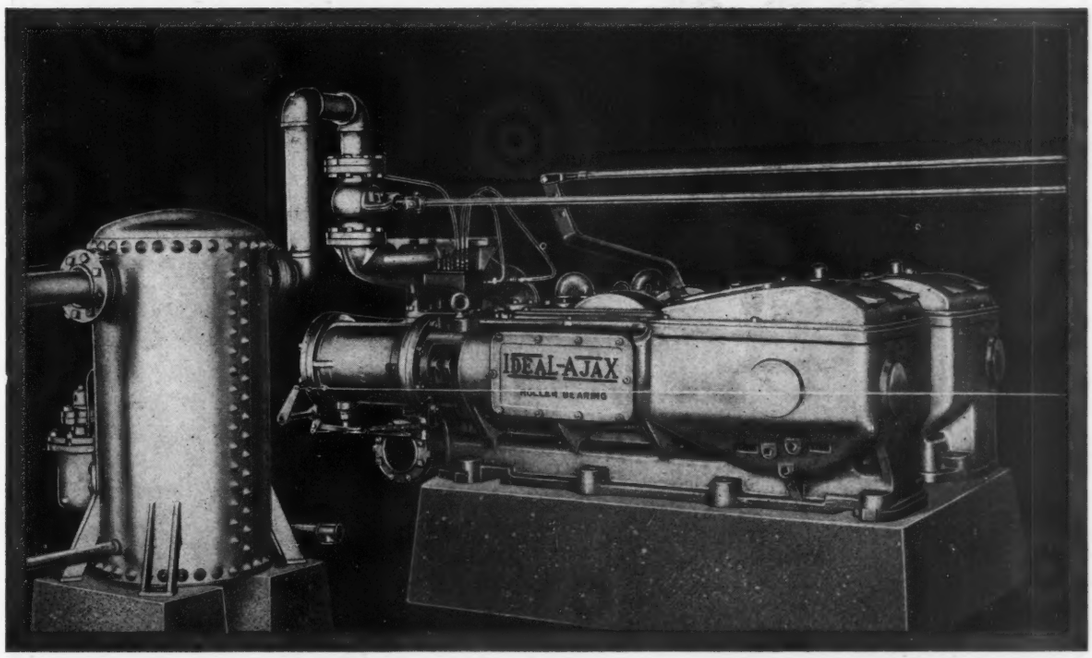
ROLLER BEARING
STEAM DRILLING ENGINES

Ask the National Supply Man for Details

in the Humble Oil Field

The new large-capacity Separator will improve the operation of all AJAX and IDEAL-AJAX Engines where there is special need of keeping water from cylinders. While this steam Separator was first used with piston valve engines, it also operates to advantage with slide valve engines. This hook-up relieves engine of strain necessary to force water back thru the valves, improves lubrication because water is not present to wash sides of cylinder walls and valve seats.

Made by AJAX IRON WORKS, Corry, Pa.

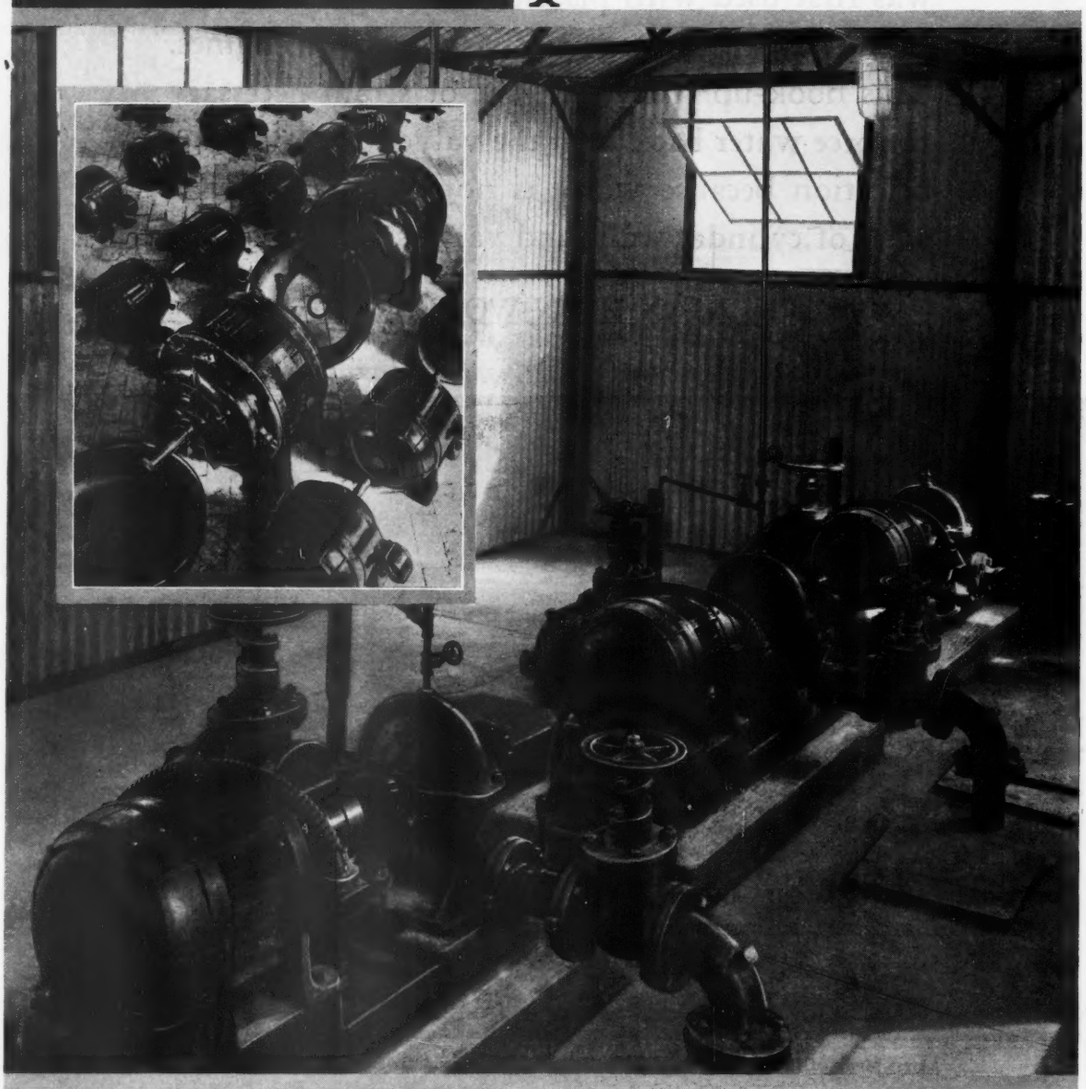


Latest Model IDEAL-AJAX Twin Roller Bearing Engine with Large Capacity Steam Separator.

Ask the National Supply Man to tell you about it.

Safe Motors

Wagner Air-jacketed Motors are safe because they are totally enclosed . . . they are economical because they are well ventilated by a blower mounted externally on one or both ends of the shaft, depending on the motor rating. These motors are proof against corrosive fumes, moisture or dust. In the oil industry they are used indoors and out-of-doors because they are always ready for service.



Wagner, Quality

Check your requirements with Wagner, because Wagner builds every commercial type of alternating current motor.

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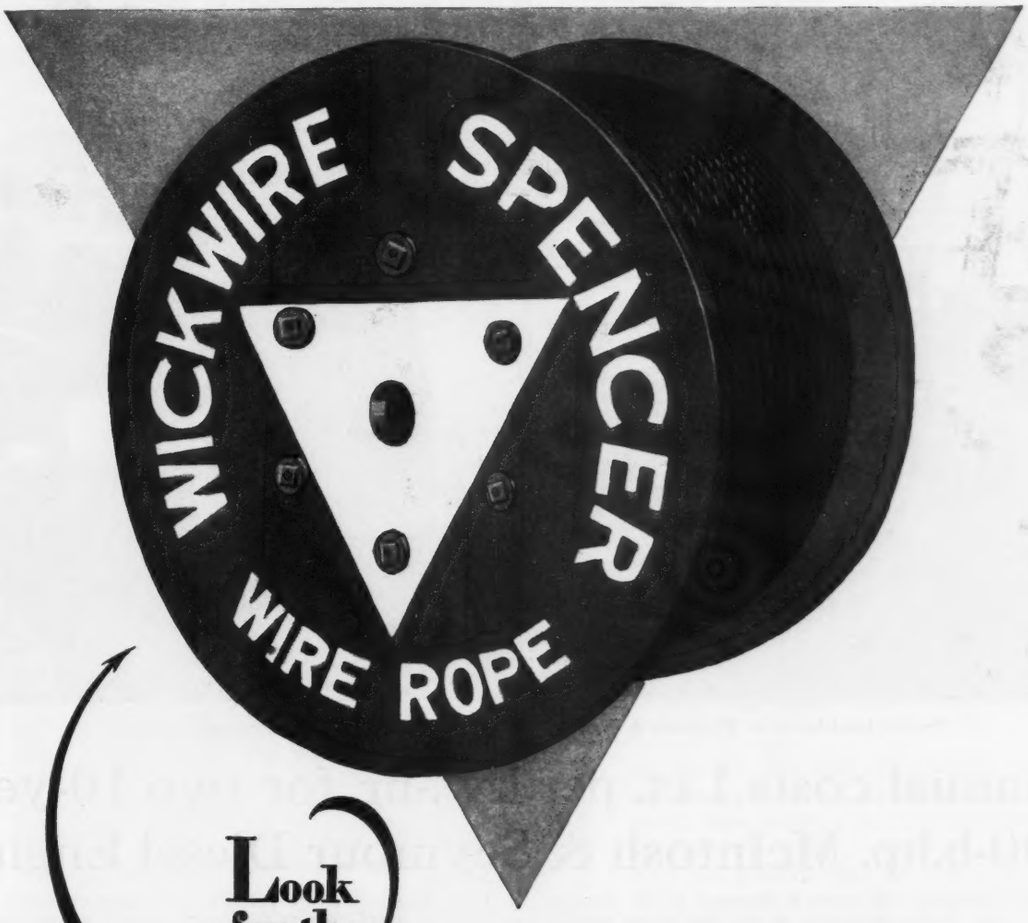
PRODUCTS . . . FANS . . . DESK . . . WALL . . . CEILING
TRANSFORMERS . . . POWER . . . DISTRIBUTION . . . INSTRUMENT
MOTORS . . . SINGLE-PHASE . . . POLYPHASE . . . DIRECT CURRENT

61-7832-4

For Strength and Uniformity Use



Look for the triangle on the reel

WICKWIRE SPENCER STEEL CO.
Home Office: 41 East 42nd St., New York City
Branches: San Francisco Los Angeles

WICKWIRE SPENCER STEEL CO.

WICKWIRE SPENCER
WIRE ROPE

Also distributed by

WICKWIRE SPENCER SALES CORP.
Tulsa, Okla.
Seattle, Wash. Portland, Ore.

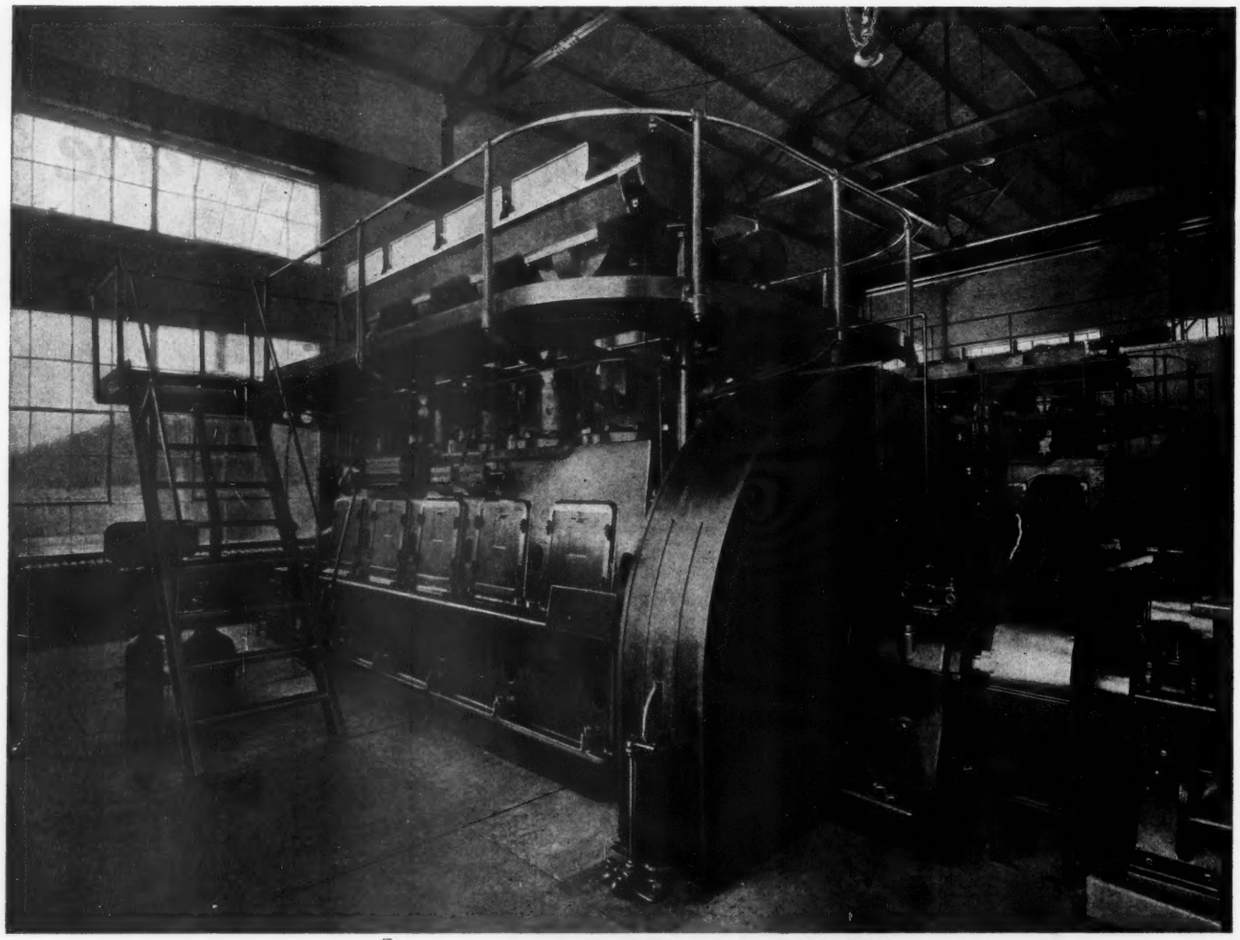
T. T. Word Supply Co.
Houston, Texas.

Acme Tool Co.
Breckenridge, Tex.

Lucey Products Corp.
Tulsa, Okla.

Standard Supply & Hdwe. Co.
New Orleans, La.

A. F. Keck & Co.
Butler, Pa.



Typical installation of McIntosh & Seymour Diesel Engines in a pipe-line pumping station.

Total annual costs 1 ct. per kw.-hr. for two 10-year-old 1000-b.hp. McIntosh & Seymour Diesel Engines

TWO 1000-b.hp. McIntosh & Seymour Diesel Engines driving 700-kw. generators in the plant of an electric power company are ten years old. During the year from June, 1926, to June, 1927, the maximum 15-minute peak on these units was 1500-kw. and the units operated under a load factor of 42 per cent. The annual report covering 5,272,000 kw.-hr. generated during this period shows costs exclusive of fixed charges, as follows:

Superintendence	$ 361.25	
Engine room labor	4,900.90	
Electric labor	93.65	
Fuel	22,249.08	
Water	653.74	
Lubrication	1,621.09	
Production supplies	386.91	
Station Expense	311.86	$30,578.48
Maintenance, building	$ 379.63	
Maintenance, engines	3,057.86	
Maintenance, exciters	.75	
Maintenance, control apparatus	.60	
Maintenance, converting apparatus	300.49	3,739.33
GRAND TOTAL		$34,317.81
Cost per kw.-hr.		$.0065

During this period, 11,005 bbl. of fuel oil costing $2.02 per bbl. of 320 lb. were used, or .668 lb. per kw.-hr. On a basis of 19,000 B.t.u. per lb. of fuel oil, this involves a heat consumption of 12,700 B.t.u. per kw.-hr.

These figures indicate that the total plant operating cost including fixed charges was barely over 1 ct. per kw.-hr. Such cost from 10-year-old units certainly proves that McIntosh & Seymour Diesel Engine performance does not deteriorate appreciably as the installation grows older, and that these units are excellent for pipe-line pumping stations.

Wtih their sustained high thermal and mechanical efficiencies, McIntosh & Seymour Diesel Engines give the utmost protection of investment against depreciation. *No McIntosh & Seymour Diesel unit has yet become obsolete.* If you want lower generating costs at the start and equally attractive figures in the after years, let our Engineers explain the possibilities.

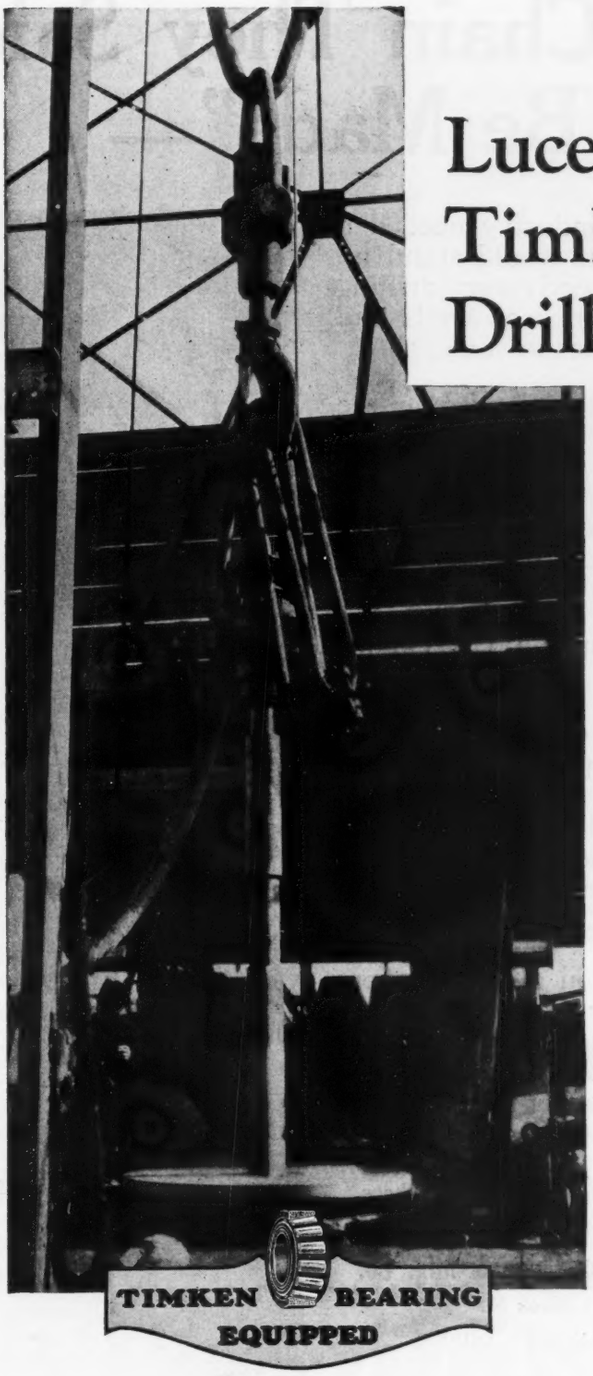
Capacities 80 to 10,000-b.hp. in stationary types suitable for central station, municipal lighting, waterworks and industrial power.

McINTOSH & SEYMOUR CORPORATION
Division of American Locomotive Company
Main Offices and Works: AUBURN, NEW YORK

SALES OFFICES

New York City, 30 Church St. — Kansas City, 1016 Baltimore Ave. — Jacksonville, Fla., 412 Bisbee Bldg.
San Francisco, 815 Sheldon Bldg. — Houston, Texas, 2703 Esperson Bldg.

McINTOSH & SEYMOUR DIESEL ENGINES



Lucey Timken-Equipped Drilling Appliances Show Service Economies

Modern well-drilling efficiency is strikingly illustrated by the photograph reproduced here.

It shows how extensively manufacturers of oil field equipment are applying Timken benefits to their products, and how fully oil producers are taking advantage of the economy, dependability, endurance and low maintenance represented by Timken-equipped machinery.

Included in the equipment shown in this operation picture, are the Lucey B-3000 horizontal draw works, the Lucey A-10000-F rotary and the Lucey E-6000 swivel. These units are manufactured by the Lucey Products Corporation, Tulsa, Oklahoma, and are all Timken-Bearing-Equipped.

The bearing requirements in the different types of equipment vary considerably, but Timken versatility takes care of them all with the utmost efficiency, for anti-friction ability, radial-thrust load capacity and rugged stamina in the highest degree are inherently combined in Timken Bearings as a result of the exclusive combination of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken-made steel.

THE TIMKEN ROLLER BEARING CO.
CANTON, OHIO

TIMKEN
Tapered
ROLLER BEARINGS

Here's The Chain They Said "Couldn't Be Made"—

The oil industry needed a chain that would stand up in high speed rotary drilling on modern deep wells and deeper ones to come.

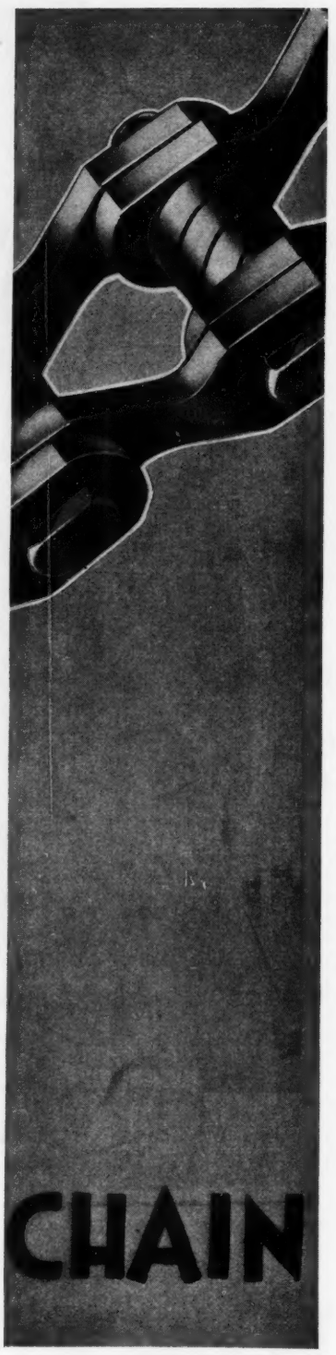
Men, old and wise in the business, you'll remember, said, "It couldn't be done without changing A. P. I. Sprocket Specifications." But Union went quietly ahead and *did it!*

Union Super A. P. I. Chains are not only 20 to 45% stronger than ordinary A. P. I. Chains of similar size, but they are *improved all along the line,* including the new long-wearing, positive lubricating, power saving, roller bearing construction HELIFLEX Roller.

To tell you all about them and their unusual features would require pages, but we have a very interesting bulletin covering them all.

Write for your copy or ask your local Frick-Reid Supply Store.

The Union Chain & Mfg. Co.
Black St.
SANDUSKY, OHIO



Super A. P. I. CHAIN

Laying a 14" Naylor Pipe line in uniform 40 foot lengths.

Saving $506.88 Per Mile In Laying Costs ....With Naylor Pipe

THIS saving was made by a large oil company on a 12" Naylor Pipe line, Victaulic coupled. The laying costs of the whole line totalled only $100.32 per mile.

A similar 12" line of standard weight pipe, 18 to 22 foot random lengths, had cost this same company $607.20 per mile to lay. *$506.88 more than Naylor Pipe had cost them.*

Naylor Pipe assures lower laying costs because of its light weight. It weighs one half as much as standard weight wrought pipe. Light weight pipe speeds up laying because it is so much easier to handle in the field. And ease of handling requires fewer men on the job. Less labor means lower costs.

As to the other economies of Naylor Pipe: When the total costs on the two lines were finally compared (from freight to "as laid in the ground") the results *showed a net saving of $2064.74 per mile on Naylor Pipe.*

The light weight of Naylor Pipe which is responsible for these economies is due to a spiralwelded lock-seam truss which provides maximum structural strength with minimum weight.

NAYLOR PIPE COMPANY, Main Office & Plant, 1230 E. 92nd St., CHICAGO

SALES OFFICES

25 Church St., New York
Witherspoon Bldg., Philadelphia
1209 First National Bank Bldg., Pittsburgh.
507 Philtower Bldg., Tulsa
601 Post-Dispatch Bldg., Houston

DUCOMMUN CORPORATION
LOS ANGELES SAN FRANCISCO
Exclusive Distributors:
California, Arizona, Nevada and Utah

MONTREAL, CANADA
Mechanical Equipment Co.,
New Birks Building

TONCAN COPPER

Naylor Pipe

Maximum Structural Strength Mo-lyb-den-um With Minimum Weight

IRON

Standardized Naylor Pipe is made in sizes 6" to 12" I.D. and 14" to 20" O.D. in any uniform length desired up to 40' 0". Ends made of wrought pipe standards for all types of coupling.

Where corrosion is not a problem, Naylor Pipe can be furnished in steel.

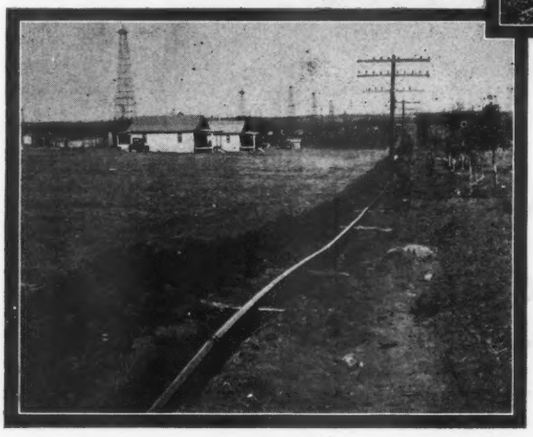
Toncan Copper Molybdenum Iron is a development of Central Alloy Steel Corporation, the world's largest and most highly specialized alloy steel producers. It possesses a superior corrosion resistance, making it the favored pipe material.

VICTAULIC

COUPLINGS

"For every Joint on every Line"

16" gas gathering line of major operator in West Texas.



3" Victaulic coupled gasoline line at Seminole, Okla.

12" gas line and 8" oil line in the Lovell Field, Oklahoma.

HANLON-WATERS, Inc.
Box 1404, Tulsa, Okla.

Please send Victaulic Bulletin No. 2.

Name_____

Address_____

Company_____ Position_____

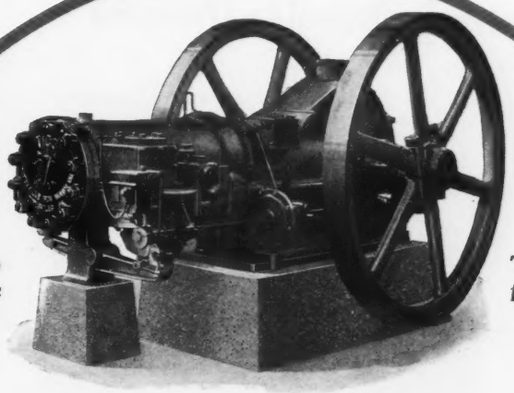
FLEXIBLE LEAK-PROOF
VICTAULIC
REG. U.S. PAT. OFF.
PIPE COUPLINGS

Victaulic Couplings are used by the pipe line, gasoline and production departments of many major operating companies quickly and economically laying new or reconditioned lines.

Flexible and leak-proof Victaulic Couplings require half the time and labor to install. Installed lines are just as quickly and easily taken up and relaid. May we send the details? Simply mail the coupon.

HANLON-WATERS
INC.
General Offices: TULSA, OKLA. *Box 1404*
HOUSTON FORT WORTH DENVER

Ample stocks carried at Tulsa and Cleveland



This is the TICO *4-Cycle Engine*

There is also the popular TICO *2-Cycle*

HALF LOAD
FULL LOAD
OVERLOAD

Unique features of the TICO 4-Cycle 25-90 H.P. Gas Engines

Extra long stroke
Easy hand or air starting
All reciprocating parts and governor enclosed oil tight
Patented dash pot insures absolute valve alignment
Two piece cylinder head

WHATEVER it is, you can rely on TICO Gas Engines to do the job. They have power to spare. They are easy to start. They will run without constant attention and "deliver the goods" throughout their exceptionally long life.

No gas engine can do more. And that's why you should follow the lead of oil men everywhere by putting TICO Gas Engines to work on your job.

THE TITUSVILLE IRON WORKS COMPANY
Division of Struthers Wells-Titusville Corporation
TITUSVILLE, PA.

Mid-Continent Office
503 Exchange National Bank Building
Tulsa, Okla.

For Kansas, Oklahoma and Northwestern Texas
International Supply Company,
Tulsa, Okla.

For Export
American Steel Export Company, Inc.
535 Fifth Avenue
New York, N. Y.

For California
California Machinery and Supply Company,
2449-55 Hunter St., Los Angeles, Calif.

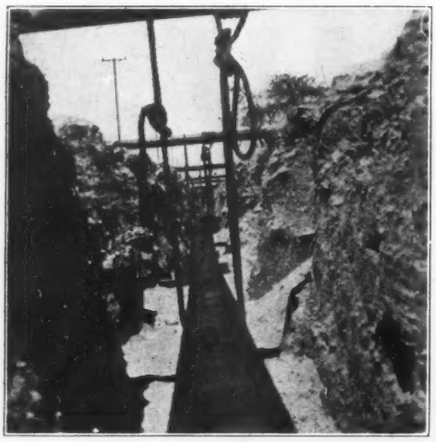
For Texas, Louisiana, Arkansas and New Mexico
Mid-Continent Supply Company,
Fort Worth, Texas

TITUSVILLE
OIL FIELD EQUIPMENT

GAS ENGINES—PUMPS—BOILERS—DRILLING RIGS—STEAM ENGINES

TIW-38

Veterans in California Service

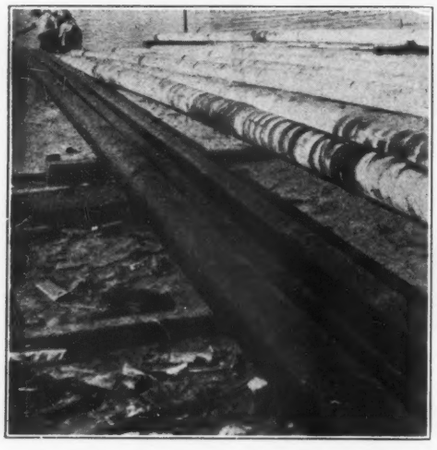


Near San Fernando, a ten-inch line protected with NO-OX-ID and NO-OX-ID-IZED Wrapper.

NO-OX-ID
IRON-RUST
TRADE MARK
The Original Rust Preventive

Eight-inch line laid across Los Angeles Harbor at Seal Beach. Protected with NO-OX-ID and NO-OX-ID-IZED Wrapper in 1926. Inspected in 1928 and found in perfect condition.

Sixteen-inch line at Long Beach. Protected with NO-OX-ID and NO-OX-ID-IZED Wrapper. Under water at high tide.

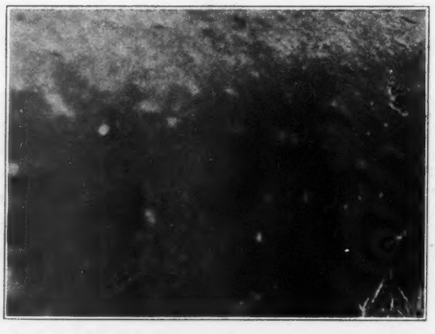


Wilmington Bay. Group of lines coated with NO-OX-ID and Double Wrapped with NO-OX-ID-IZED Wrapper. Some with heavy canvas over wrappers for protection in dragging.

Putting lines described to left, in the water. Bay is forty-four feet deep and lines are dragged into a dredged trench four feet deep.

Inspection after laying lines described to left. The only place a Dearborn service man doesn't go! Do you appreciate the high value placed on NO-OX-ID in using it on work of this type?

Another job for Davy Jones' locker. Protected with NO-OX-ID and NO-OX-ID-IZED Wrapper. The wood is to preserve the covering in dragging across Los Angeles Harbor.



This line along Telegraph road was coated with a material sold for the same purpose as NO-OX-ID. In a short time it was in this shape. The blisters are full of water.

DEARBORN CHEMICAL COMPANY
NO-OX-ID-IZED WRAPPER
REG U.S. PAT. OFF.
NEW YORK CHICAGO

Part of the same job as wood protected lines opposite. The line is in a ditch on the flats.

Let us submit data and estimates on both new and reconditioning work.

DEARBORN CHEMICAL COMPANY

"A House of Chemical Engineers" In Its Forty-third Year of Service to Industry

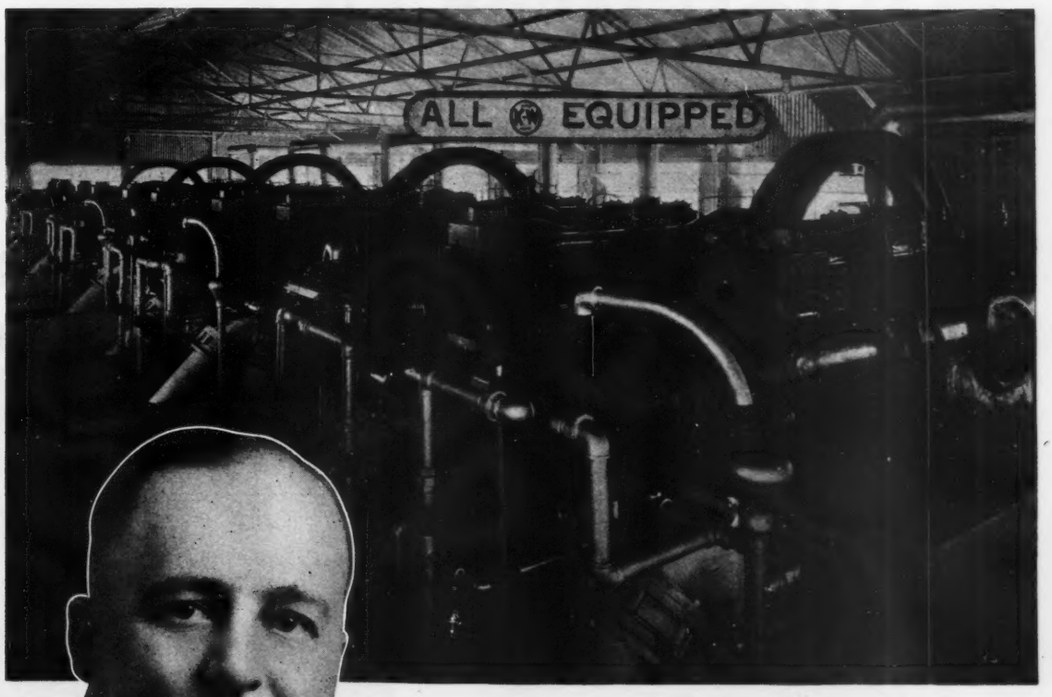
310 South Michigan Ave., Chicago 807 Mateo St., Los Angeles 205 East 42nd St., New York

Canadian Offices and Factory: 2454-2464 Dundas St., West, Toronto

This Chinese Proverb Reads "A PICTURE IS WORTH TEN THOUSAND WORDS"

Here Is A Picture

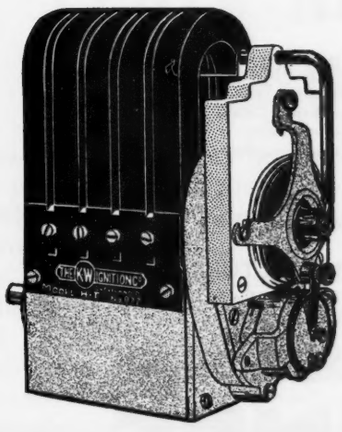
畫意能達萬言



Regarding the above Mr. Ned L. Cook, Superintendent of the Shamrock Oil Co., McLean, Texas, says—

"Have six engines equipped with K-W Magnetos with one hundred percent service. Have been a user of K-W Magnetos twelve years and am a strong believer in K-W service on gas engines."

Signed, Ned L.W. Cook, Superintendent, Shamrock Oil Co., McLean, Tex.



The K-W High Tension MAGNETO

A GIANT FOR POWER— A BRUTE FOR ENDURANCE

Models For Every Type of Engine

Manufactured by

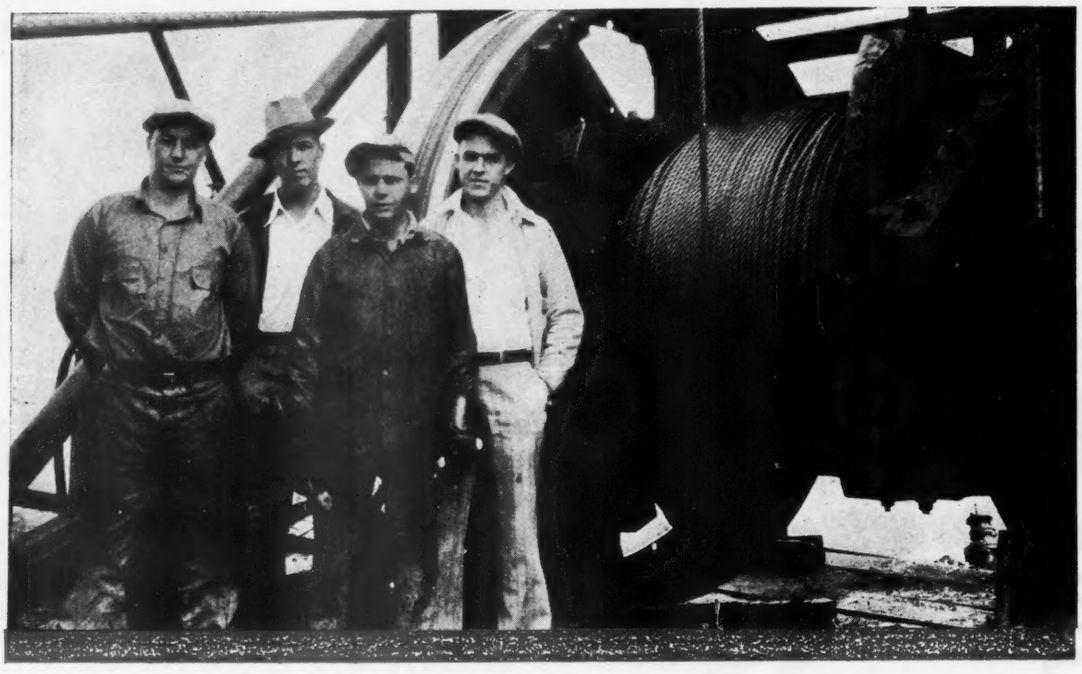
THE K-W IGNITION CORP.
CLEVELAND, OHIO, U.S.A.

OKLAHOMA-TEXAS REPRESENTATIVES

MAGNETO IGNITION CORP.
304-306 EAST SECOND STREET
TULSA OKLAHOMA

MORRISON & JACKSON
HOLLIDAY TEXAS

UNION WIRE LINE gives Outstanding Performance at BIG LAKE Well C-3 (NO. 131)



THE Richmond Drilling Company found that this well, one of the deepest cable tool drilled holes in the world, was a severe test of wire rope service. They also found that UNION wire gave a good account of itself on all operations.

In the picture, left to right, are H. M. Bushager, Driller; Claude Bosworth, Tool-dresser; L. C. McDonald, Tool-dresser; Mont Bosworth, Driller; and a 7-8", 10,000' UNION Drill Cable.

UNION WIRE ROPE CORP.
3 North Madison Ave., Tulsa, Oklahoma
Oil Country Sales and Export Offices, 336 Kennedy Building, Tulsa.
Branch Office and Warehouse, Portland, Oregon

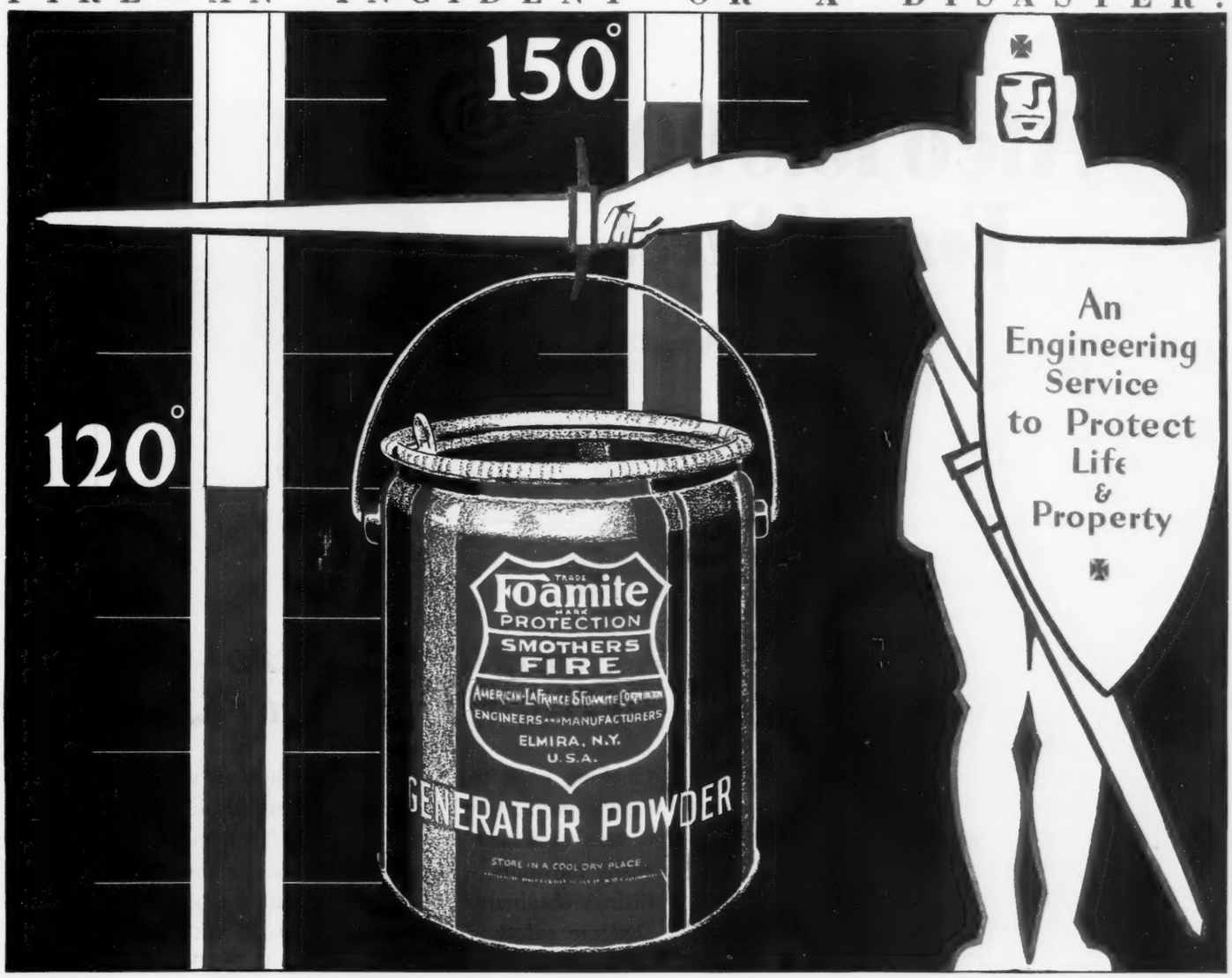
Factory:
21st and Manchester, Kansas City

JARECKI MANUFACTURING CO.
Mid-Continent and Eastern Oil Fields, Distributors
• • STOCKS AT ALL STORES • •

TRADE MARK

UNION WIRE LINES

FIRE—AN INCIDENT OR A DISASTER?



2 Years at 120°...then 10 Months at 150°...STILL UNHARMED!

Generator Powder may lie around your plant for a long time. It may be subjected to all sorts of temperature conditions.

Yet, when Fire breaks out, the condition of your Generator Powder is all important. Powder that deteriorates is worse than useless.

FOAMITE Generator Powder—the *single* powder used in FOAMITE Generators—has been put through the most exacting tests...and it has never fallen down. To test extreme temperature conditions, several cans of FOAMITE Generator Powder were held at 120°F. for two years. Then they were transferred to a cabinet at 150°F. in which, to date, they have been held for ten months. Even under these extreme conditions, the powder has yet to show the slightest sign of deterioration!...Our representatives are located near all principal oil producing and refining centers. American-LaFrance and Foamite Corporation, Dept. F-38, Elmira, N. Y.

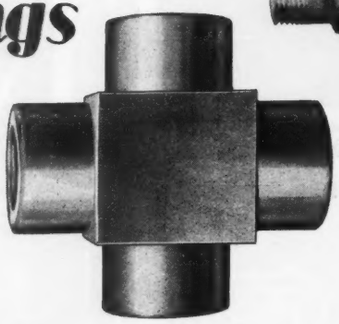
Every recognized type of fire-extinguishing equipment

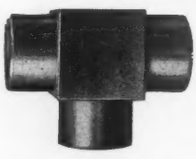
LA FRANCE AND FOAMITE PROTECTION

AN ENGINEERING SERVICE

AGAINST FIRE

Alco 10,000-Lb Forged Steel Fittings





Complete Control of Highest Pressures

Choking back to control the production of high pressure flowing wells puts a greatly increased strain on the well hook-up. To avoid costly blowouts, it is economy to use the best fittings obtainable. For perfect control with absolute safety, bean down your well with Alco Flow Beans and use Alco 10,000-lb. Forged Steel Crosses, Tees, Ells, Combination Cages, Nipples, Bull Plugs and Swage Nipples for the christmas tree. Bored, machined and threaded on the lathe, from solid forgings of highest quality steel, they have ample reserve strength for any gas or oil pressure yet encountered in any field.

ALCO OIL TOOL CO., Inc.

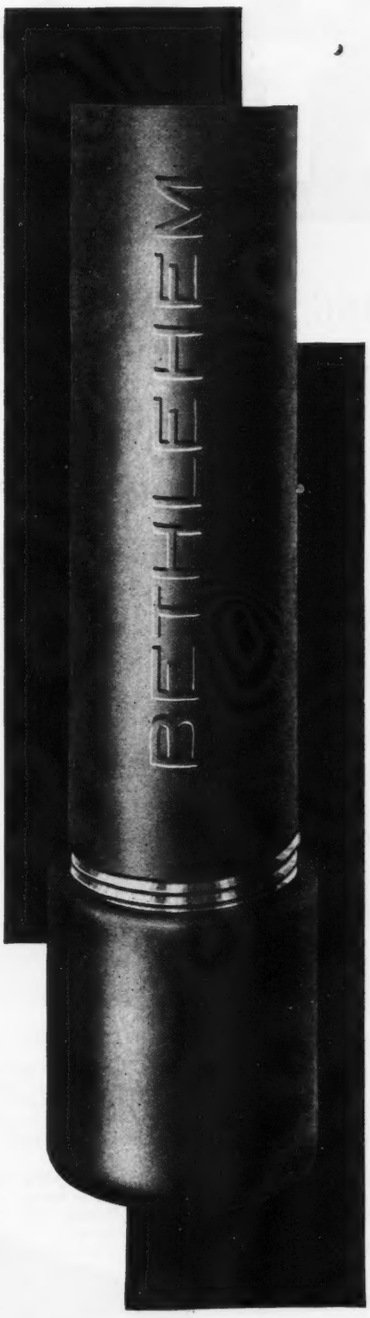
P. O. Box, "A", Compton, Calif.

Bakersfield — 6101 Texas Ave., Houston, Texas

Maricopa — 831 East "G" St., Oklahoma City, Okla.

Ventura

OIL WELL ALCO TOOLS



Pipe that meets a definite quality standard

The purchaser of Bethlehem Steel Pipe is assured of a product that conforms in every respect to a definite and long-established standard of quality—the standard to which this Company has been working throughout more than half a century devoted to the manufacture of steel and steel products.

From the mining of the ore, through the finishing operations, the manufacture of Bethlehem Steel Pipe is controlled by one organization. Each step in the conversion of the steel into pipe is carried out under the supervision of thoroughly experienced men. The tests and inspections are most critical, so as to make certain that each length of pipe shipped conforms in every way to the Bethlehem standard of quality.

Bethlehem Steel Pipe is quality pipe. Pipe that meets every requirement and passes every test.

Make it a point to see the exhibit of Bethlehem Steel Company and Pacific Coast Steel Corporation in Booths 137 and 139 at the Oil Equipment and Engineering Exposition, Los Angeles, March 16th to 23rd.

BETHLEHEM STEEL COMPANY

General Offices: Bethlehem, Pa.

District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Detroit, Cincinnati, Chicago, St. Louis.

Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Portland, Seattle, Honolulu.

Export Distributor: Bethlehem Steel Export Corporation, 25 Broadway, New York City.

BETHLEHEM STEEL PIPE

FISHING TOOLS
DRILLING TOOLS

AMERICAN IRON & MACHINE WORKS CO. · OKLAHOMA CITY ·

AMERICAN FISH TAIL BITS

This Bit reduces labor, expense and speeds up production by making more hole every time run, reducing your round trips 50%. . . . Makes profitable drilling by keeping your pipe in the hole.

The American Fish Tail Bit is especially effective in drilling through gumbo or other soft formation—the water courses extend through the entire body of the bit, prevents balling up of bit, hastens the mixing of cuttings and promotes the rise of mud in the hole.

In keeping with our usual method, this bit is manufactured with ample material for redressing—cutting surfaces are easily prepared and hard surfaced for long service.

INTRODUCING THE NEW AMERICAN ADJUSTABLE RIG BRACE

WEAR PROOF • WEATHER PROOF • FIRE PROOF

SELF-CONTAINED

NO TURNBUCKLES, RODS OR STRAPS

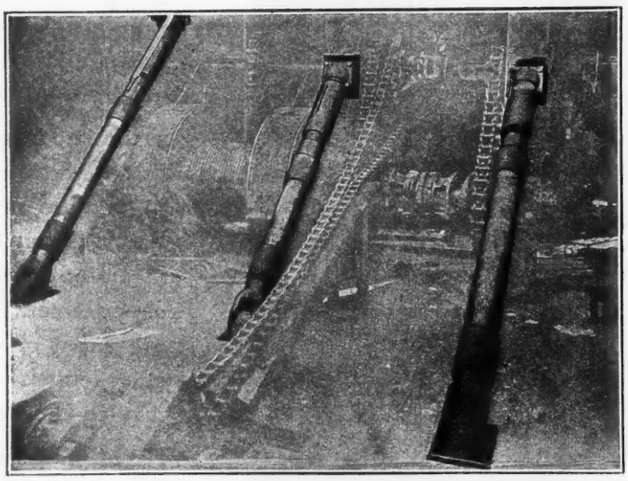


PHOTO SHOWING VARIOUS POSITIONS OF RIG BRACE

Note this rig brace pushes down on derrick floor and engine foundation instead of pulling up as does the old style brace. Also note following outstanding features: Adjustable in few minutes with one set chain tongs—vibration of rig is eliminated by quick readjustment—twelve inches adjusting space—in moving rig they can be dismantled in few minutes for moving to new location or storage and occupy very little space while in storage.

You are invited to investigate the merits of this exceptional rig brace. We want to show you "how it works"—eliminating vibration, etc. It will pay you to keep your rigs equipped with the American Adjustable Steel Rig Brace.

Visit our booth No. 246 at the Oil Equipment & Engineering Exposition in session at Los Angeles, California, March 16th to 23rd, 1930.

AMERICAN IRON and MACHINE WORKS CO.

Manufacturers of Oil Field Equipment

OKLAHOMA CITY, OKLAHOMA

American Releasing and Circulating Overshots
American Rock Bit Wrenches
American Milling Shoes
American Flexible Coupling for Rock Bit Lubricators
American Steel Tool Houses
American Steel Tool Boxes
American Forged Steel Wall Hooks
American Rock Bit Breakout Blocks
American Paraffin Bits
American Forged Steel Drill Collars
American Female Die Nipples
American Tapered Taps

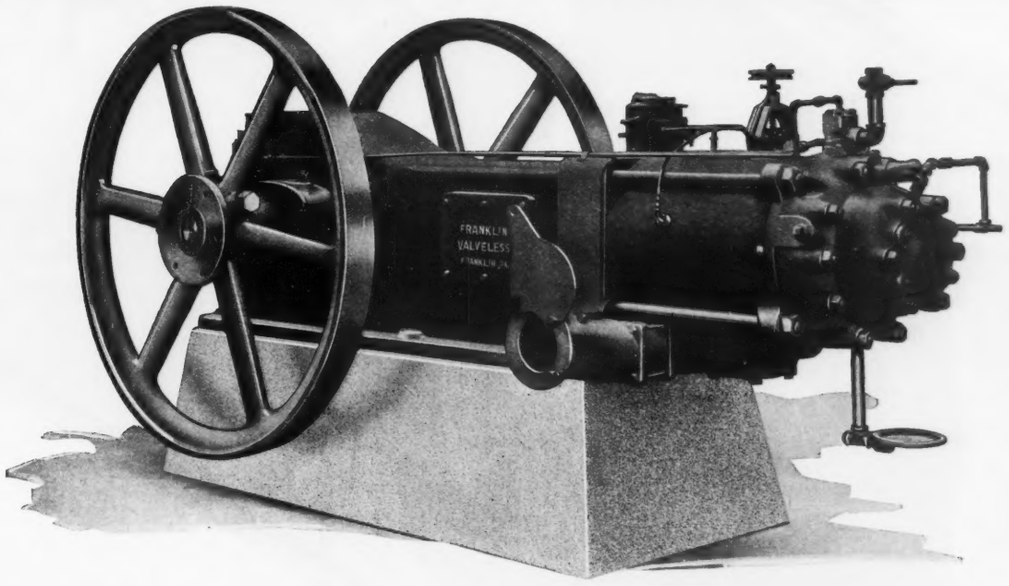
AMERICAN OIL FIELD EQUIPMENT

For Sale By The Leading Supply Companies

American Forged Steel Subs
American Rotary Shoes
American Cone Fishing Baskets
American Steam Lubricators
American Side Tracking Mills
American Combination Reverse and Throttle Levers
American Steel Engine Foundations
American Automatic Cat Heads
American Automatic Cathead Control Levers
American Rotary Milling Tools
American Myracle Sucker Rod Sockets
American Surface Bit Blades for Rock Bits

American Drill Pipe Float Joints
American Pump Manifold Check Valves
American Eccentric Releasing Overshots
American Casing Suspension and Blowout Preventers
American Lead Plugs
American Rock Bit Cone Fishing Sockets
American Steel Whipstocks
American Inside Pipe Cutter for Drill Pipe or Casing
American Adjustable Steel Rig Braces
American Fish Tail Bits
American Pipe Rackers

Franklin Valveless Oil Drilling Engine



It makes no difference Where your well is -

If you can slide your engine on one truck, location isn't an important factor. You can do this easily with the Franklin Valveless Oil Drilling Engine. You can use oil as fuel: easy to secure, low in price and the OF has an extremely low fuel consumption. Water consumption, too, is low.

The OF has power to spare: at both slow and high speeds. It drills faster, cheaper and with less trouble than any competitive prime mover you ever tried — an honest test will convince you.

Lifting costs are invariably lowered with the installation and use of an OG Gas Pumping Engine. A trial usually results in standardization — why not make a test?

And when your well is drilled, move your OF to the next location and drop a Franklin Valveless OG Pumping Engine on the same foundation, and you'll find the OG Pumping Engine is better than any other engine you ever operated.

We welcome the critical examination of exacting power users who demand economy and efficiency.

FRANKLIN VALVELESS ENGINE CO.

FRANKLIN, PENNSYLVANIA

Distributed by **OIL WELL SUPPLY CO.**

"Buffalo"

THE ANNOUNCEMENT THE OIL INDUSTRY HAS BEEN WAITING FOR

Gas-Gasoline-Oil-Engine DRILLING UNITS

4 CYL.	6¾″x9″	80 H. P.
6 CYL.	5⅞″x7″	125 H. P.

The announcement of the NEW BUFFALO ENGINES will, we believe, take first rank among the most important statements reaching the oil industry in 1930.

The experience and resources of the BUFFALO GASOLENE MOTOR COMPANY, who have pioneered in the internal combustion engine field, makes it possible to produce a dependable new engine.

The NEW BUFFALO ENGINE brings you gasoline engine dependability with Diesel engine economy, but free from their troubles, burning low-grade fuels that can be purchased throughout the country, gas — gasoline — kerosene — distillate — alcohol and light fuel oils. This means a big saving in your fuel bill.

They do not require the services of an expert operator.

Full information upon request.

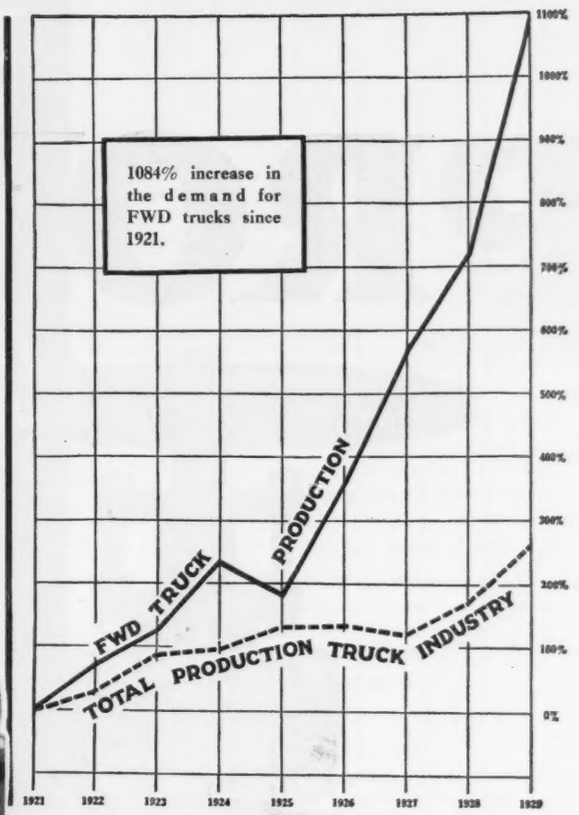
BUFFALO GASOLENE MOTOR COMPANY
Buffalo, New York

1084% INCREASE

Since 1921 the demand for FWD trucks increased 1084% while the total production for the truck industry increased only 250%.

In 1929 alone, the demand for FWD's was nearly 50% more than in 1928.

This record is unapproached by any other truck company!



We all know this—Performance is the thing which counts most in the oil field. There is no doubt about that. The oil field is the final proving ground of all trucks.

FWD (four-wheel drive) trucks are handling the heaviest of oil field trucking and doing it right. The Halliburton Oil Well Cementing Company purchased over 75 FWD trucks because nothing else could do their trucking satisfactorily.

May we send you a description of our Oil Field Special?

THE FOUR WHEEL DRIVE AUTO COMPANY
Clintonville, Wisconsin
Canadian Factory: Kitchener, Ontario

BACKED BY NATION WIDE SERVICE

FWD TRUCKS

VALVES & FITTINGS *with a*

PROVED

record of strength and dependability

Carried in Stock and Sold by

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REGISTERED U.S. PAT. OFF.
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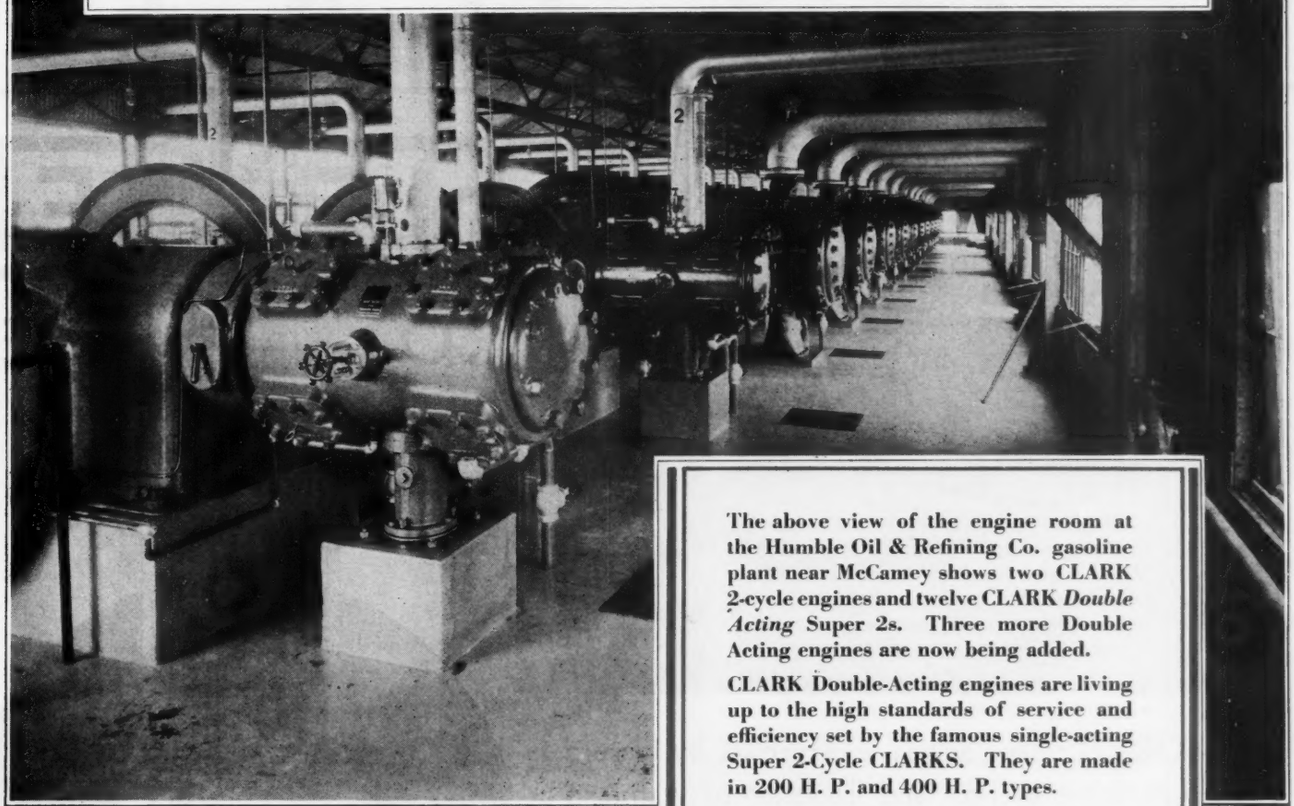
Double-Acting CLARKS in Texas



The above view of the engine room at the Humble Oil & Refining Co. gasoline plant near McCamey shows two CLARK 2-cycle engines and twelve CLARK *Double Acting* Super 2s. Three more Double Acting engines are now being added.

CLARK Double-Acting engines are living up to the high standards of service and efficiency set by the famous single-acting Super 2-Cycle CLARKS. They are made in 200 H. P. and 400 H. P. types.

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OLEAN, NEW YORK

Export Office: 150 Broadway, New York City
Warehouses: Tulsa, Oklahoma; McCamey and Sweetwater, Texes; Artesia, New Mexico
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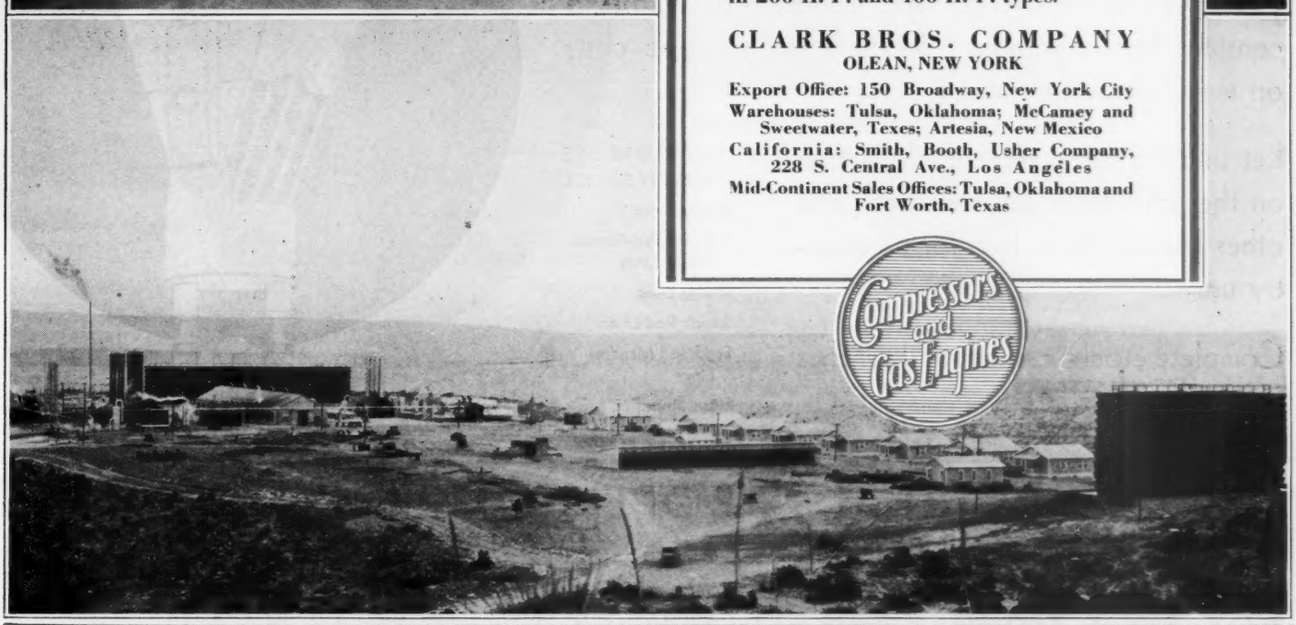
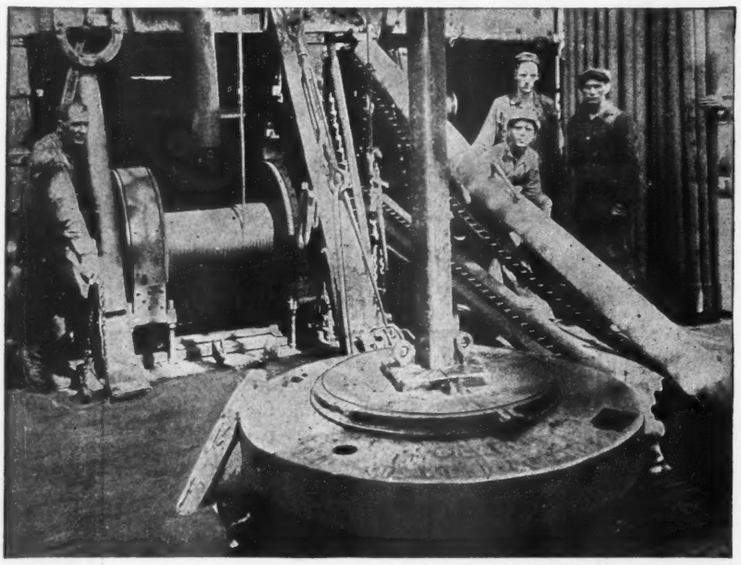
Mid-Continent Sales Offices: Tulsa, Oklahoma and Fort Worth, Texas



CLARK

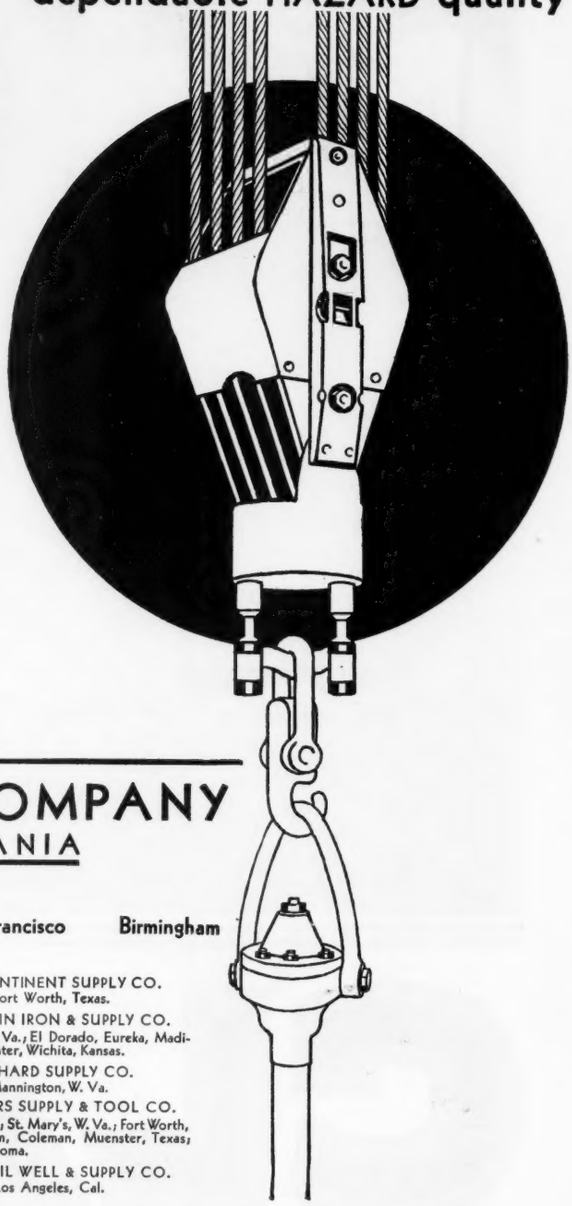
HAZARD



FLEX SET

ROTARY LINES

Pre-formed Wire Line of dependable HAZARD quality



PRE-FORMED rotary drilling lines—built by Hazard—with extra strength and flexibility to withstand constant bends without injury, are cutting rope costs on many rotary operations.

Let us send you complete information on the advantages of "Flex-Set", and other Hazard Wire lines for oil country usage.

Complete stocks carried at branches and distributors listed.

HAZARD WIRE LINE FOR EVERY SERVICE

- Drilling Lines
- Flex-Set Pre-formed Rotary Lines
- Casing Lines
- Sucker Rod Lines
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- Wire Strand

HAZARD WIRE ROPE COMPANY

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STEEL
Band Wheels and Tug Rims

OF the many new uses to which steel has been put in manufacturing drilling equipment, KM CO Band Wheels and Tug Rims are among the most dominant. Design and construction which insure exceptional strength, distinguish the KM CO Band Wheel. A special steel mixture, solid Hub and tangential placement of arms, combined with substantial riveting, produce a wheel for service on wells of any depth. These wheels are furnished in 11 ft. and 14 ft. diameters, with 16 in. face widths and for use with Double or Triple Groove Tug Rims. KM CO Steel Tug Rims are also of extra heavy construction and are made in 7 ft. and 8 ft. diameters, Double and Triple Groove types. The mere sight of this rugged KM CO equipment inspires perfect confidence.

PRODUCTS

Steel Derricks, Rig Irons, Bull Wheels, Calf Wheels, Band Wheels, Crown Blocks, Tug Wheels, Sand Reels, Steel Tankage, Tank Fittings, Refinery Equipment, Steel Plate Construction.

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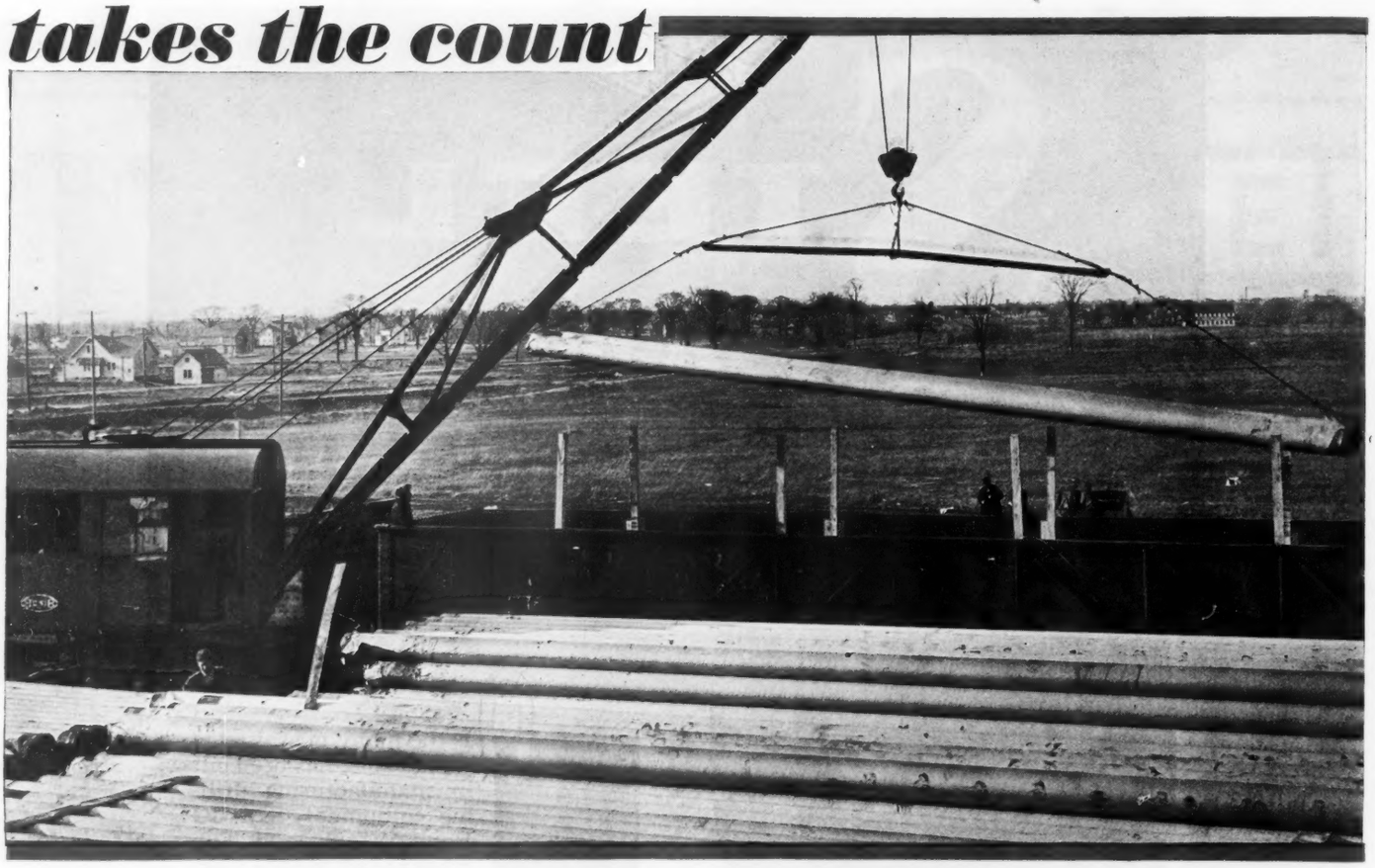
Sales Offices: Hunt Bldg., Tulsa, Okla.; Magnolia Bldg., Dallas, Texas; Central Bldg., Wichita, Kan.

CORROSION

takes the count

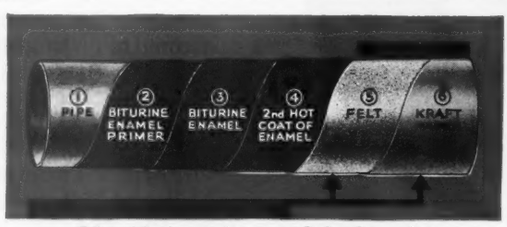


Loading pipe mechanically coated and wrapped at the mill by Hill, Hubbell & Co. Process

BEFORE a champion risks his title in the prize ring he puts in weeks and weeks of intensive training, armoring his body with a protective layer of solid muscle that is proof against the hardest wallops. Unprotected line pipe is nothing but a dub amateur to corrosion. Weak spots are soon found and the pipe is down and out — and so are the investor's profits.

It has taken many years of research to find a way to make corrosion take the count, but it has been found and his blows are no longer felt by operators who protect their pipe *before* they lay a single length in the ground. Hand-coating of pipe offers partial protection, but it is a slow, uncertain and expensive operation.

The only way to lick corrosion and do the job right is to buy *pipe that has already been coated and wrapped at the mill.* The mills listed below supply pipe that is mechanically coated and wrapped by the Hill, Hubbell & Company Process. Our plants are located near these mills and are equipped to handle their output. When you buy pipe from any of these mills you know that it is fully protected against corrosion, proof against acids, alkalis and all other detrimental forces. You know it is cleaned of rust and scale before the Biturine Enamel Primer is put on. The whole process is mechanical, involving no human element. The final coats of felt and kraft paper are wound on under high tension so that nothing can touch the protective coatings of Biturine. Such pipe will stand up for years and serve without a leak.



Felt and kraft wrapping are applied under tension

The Hill, Hubbell & Company plants are equipped to coat pipe up to 24-inch diameter by the Hill, Hubbell & Company Process. We can make the number of machine-applied hot coatings and wrappings conform to any specifications covering a wide range of combinations and materials. Ask us about them.

Hill, Hubbell & Company pipe coating and wrapping plants are located in the following cities, for the production of the pipe manufacturers listed.

Central Tube Company.....Ambridge, Pa.
Spang-Chalfant & Company.....Ambridge, Pa.
Youngstown Sheet & Tube Company
Indiana Harbor, Ind.
Youngstown Sheet & Tube Company
Youngstown, Ohio
National Tube Company.....Lorain, Ohio
A. O. Smith Corporation.....Milwaukee, Wis.

BITURINE COATINGS

Biturine Enamel — Biturine Solution No. 5
Biturine Enamel Primer — Biturine 70-30
Biturine Coupling Mixture

Biturine Enamel and Primer are perfectly adapted to the Hill, Hubbell & Company Process of mechanically applying coating to the pipe at the mill.

GENERAL PAINT CORPORATION

HILL, HUBBELL & COMPANY DIVISION

PAINTS VARNISHES LACQUERS

Specialists in the science of protective coatings for industry

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The ADVERTISERS' INDEX

A

Acme Fishing Tool Co.
Air Preheater Corp., The
Ajax Iron Works 16-17
Alco Oil Tool Co. 30
Allegheny Steel Co.
Allen Air-Turbine Ventilator Co.
Allis-Chalmers Mfg. Co.
Allsteel Products Mfg Co., The 233
Aluminum Co. of America
American Askania Corp
American Asphalt Paint Co.
American Cable Co., Inc. 249
American Car & Foundry Co.
American Cast Iron Pipe Co.
American Fomon Co.
American Iron & Machine Works Co. .. 32
American La France & Foamite Corp... 29
American Meter Co.
American Radiator Co.
American Rolling Mill Co.
American Schaeffer & Budenburg Corp.
American Sheet and Tin Plate Co. 5
American Steel & Wire Co.
American Steel Works
American Telephone & Telegraph Co.
American Well Works 219
Anchor Post Fence Co.
Andrews Steel Co., The 246
Appleman, B. K. 115
Armstrong Brothers Tool Co. 248
Armstrong Machine Works
Athey Truss Wheel Co. 250
Axelson Mfg. Co., Ltd...Inside Front Cover
Ayer & Lord Tie Co.

B

Baash-Ross Tool Co.
Babcock & Wilcox Tube Co., The
Badger, E. B., & Sons Co.
Badgett Steam Lubricator Co. 229
Baker Oil Tools, Inc. 131
Baldwin Chain & Mfg. Co.
Barber-Greene Co. 3
Barco Mfg. Co.
Barnickel, Wm. S., & Co. 217
Barnsdall Refineries, Inc.
Barrett Co., The 110-111
Bartlett Hayward Co., The
Beaumont Iron Works Co., The
Bell Oil & Gas Co.
Bessemer Engine Co. 120-121
Bethlehem Steel Co. 31
Big Lake Oil Co.
Bignall & Keeler Machine Works 8
Birmingham Tank Co.
Blackor Co. 98
Black, Sivalls & Bryson, Inc. 107-108
Black Wire Rope Co.
Bosch, Robert, Magneto, Inc. 103
Braden Steel Corp.
Braun, C. F., & Co.
Brewster Co., The, Inc. 163
Bridgeport Machine Co. 157-178
Bristol Co., The
Broderick & Bascom Rope Co.
Brown, Arthur C. 248
Brown Instrument Co.
Brown-Straus Corp.
Buckeye Traction Ditcher Co.
Buffalo Gasolene Motor Co. 34
Burford Oil Co.
Burt Mfg. Co. 249
Butler Mfg. Co. 176
Byron Jackson Co. 91

C

California Manufacturing & Engineering Co. 242
Cameron Tool & Supply Co. 119
Carey, The Philip Co. 241
Caterpillar Tractor Co.
Central Alloy Steel Corp.
Central Tube Co. 213
Chain Belt Co.
Champion Machine & Forging Co., The. 251
Chaplin-Fulton Mfg. Co., The 178
Chapman Valve Mfg. Co., The
Chestnut & Smith Corp.
Chicago Bridge & Iron Works 81-82
Chicago Pneumatic Tool Co. 144
Cincinnati Advertising Products Co., The. 251
Clark Brothers 37
Classified Wants 192-193
Cleveland Trencher Co., The 243
Climax Engineering Co.
Colona Mfg. Co.
Colorado School of Mines 250
Columbian Rope Co.
Columbus Forge & Iron Co., The .....
Consolidated Ashcroft Hancock Co., Inc.
Continental Equipment Co. 59
Continental Supply Co., The 127
Cooke, C. Lee, Mfg. Co.
Cooper-Bessemer Corp., The 120-121
Cooper, C. & G. Co., The 120-121
Corona Silica Inc. 161
Crane Co.
Crane Packing Co.

D

D. & B. Pump & Supply Co. 135
Darling Valve & Mfg. Co. 6
Dart, E. M., Mfg. Co. 248
Davis, G. M., Regulator Co.
Dayton-Dowd
Dayton Rubber Mfg. Co., The
Dearborn Chemical Co. 26
Detroit Graphite Co.
Dixon Crucible Co., Joseph
Dodge Brothers Corp.
Doheny Stone Drill Co. 173
Donner Engineering Co.
Donovan Boiler Works, Inc.
Dow Chemical Co., The 230
Dresser & Gorton, Inc.

D

Dresser, S. R., Mfg. Co. 53
Driftmeter, Inc.
Du Pont de Nemours & Co., Inc. E. I.
Durametallic Corp.

E

Eagle-Picher Lead Co.
Economy Pump & Oil Tool Co., The 189
Edelblute Co., T. H. 251
Edward Valve & Manufacturing Co., The
Electric Machinery Mfg. Co.
Empire Oil & Refining Co.
Emsco Derrick & Equipment Co. 135
Enduro Nirosta Steel Co.
Ethyl Gasoline Corp.
Exchange Banks of Tulsa

F

Fenwick-Reddaway Mfg. Co. 250
First National Bank & Trust Co., The
First National Bank & Trust Co. of Oklahoma City, The
Fisher Governor Co.
Fluor Construction Co. 196
Fort Worth Steel & Machinery Co.
Fort Worth Well Machinery & Supply Co., Inc.
Foster-Wheeler Corp. 7
Four-Wheel Drive Auto Co., The 35
Foxboro Co., Inc., The
Franklin Valveless Engine Co. 33
Frates Co., The
Frick-Reid Supply Corp.
Fulton Iron Works Co.

G

G. & M. Co., Inc.
Gardner-Denver Co.
Garlock Packing Co.
Gaso Pump & Burner Mfg Co.
.....Inside Back Cover
General Electric Co.
General Paint Corp. 40
Gilbert & Barker Mfg. Co.
Goble, B. G.
Goodrich, B. F., Rubber Co., The
Goodyear Tire & Rubber Co.
Goslin Birmingham Mfg. Co., Inc.
Gott, H. P., Mfg. Co., Inc.
Goulds Pumps, Inc.
Granite City Steel Co. 224
Grant Oil Tool Co. 227
Graver Corp.
Gray Processes Corp., The
Greenspon's Joseph, Sons, Iron & Steel Co.
Griscom-Russell Co. 199
Guiberson Corp. 138-139
Gulf Refining Co. 247

H

Halliburton Oil Well Cementing Co.... 9
Hanlon-Waters, Inc. 24
Harrisburg Pipe & Pipe Bending Co.
Haynes Stellite Co.
Hazard Wire Rope Co. 38
Heat Transfer Products, Inc.
Hedges-Walsh-Weidner Co., The 212
Heeter, Sons & Co., Inc., C. A.
Hercules Motors Corp.
Hercules Supply Co.
Hercules Tool Co.
Heydrick Mapping Co. 248
Hill, Hubbell & Co. 40
Hills-McCanna Co.
Hough, Charles N., Mfg. Co. 231
Hughes Tool Co. 93
Humble Oil & Refining Co.
Hussmann Hotel
Hyatt Roller Bearing Co.

I

Imperial Belting Co. 62
Imperial Refineries
Imperial Royalties Co.
Independent Oil & Gas Co.
Ingersoll-Rand Co.
International Cement Corp.
International Composition Co., Inc.
International Creosoting & Construction Co. .....Back Cover
International Derrick & Equipment Co., The 128-129
International Harvester Co. of America
International Nickel Co., Inc., The
International Supply Co.

J

Jackson Co., Byron 91
Jackson Engineering Corp.
Jarecki Mfg. Co. 137
Jefferson Union Co.
Jenkins Bros.
Johns-Manville Corp.
Jones & Laughlin Steel Corp.
Jones, The S. M., Co. 158

K

Kellogg, M. W., Co., The 250
Kelly, John Eoghan
Kennedye-Plumb Corp.
Kennedy Valve Mfg. Co., The
Kerotest Mfg. Co. 36
Key Boiler Equipment Co.
Kingham Trailer Co., Inc.
Kirk-Morrow Iron Works, The 39
Kohler Co.
Koppers Co., The
K-W Ignition Corp., The 27

L

Landis Machine Co.
Larkin & Co.
Layne & Bowler Co.
Leader Iron Works 188
Lees-Bradner Co.
Leschen, A., & Sons, Rope Co.

L

Leonard Construction Co.
Limbert & Co., Geo. B. 250
Lincoln Electric Co. 236
Linde Air Products Co.
Link Belt Co. 73-74-75-76
Longyear, E. J., Co.
Lorraine Corp., The 214
Lucey Products Corp. 12
Ludlow Valve Mfg. Co.
Ludlum Steel Co.
Lufkin Foundry & Machine Co., The ... 113
Lufkin Rule Co.
Lummus, The Walter E., Co.
Lunkenheimer Co. 218

Mc

McAlear Mfg. Co., The
McClintic-Marshall Co.
McCord Radiator & Mfg. Co.
McEverlast, Inc.
McEvoy, J. H., & Co. 221
McGregor Working Barrel Co.
McIntosh & Seymour Corp. 20
McKee, Arthur G., & Co.

M

MacClatchie Mfg. Co. 4
Macwhyte Co.
Madison-Kipp Corp.
Magnolia Petroleum Co. 245
Maloney Tank Mfg. Co. .....Front Cover
Manzel Brothers Co.
Marion Machine Foundry & Supply Co.
Marley Co., The
Marsh Gauge Pole Co.
Martin-Decker Corp. 222
Mason Regulator Co. 11
Medart Co., The
Melcher, A. F.
Merco Nordstrom Valve Co.
Metric Metal Works
Midwest Piping & Supply Co., Inc.
Miller Combination Bailer & Pump Co.
Miller Improved Gas Engine Co.
Mine Safety Appliance Co.
Missouri Portland Cement Co.
Moon Mfg. Co., The
Moore, Lee C., & Co., Inc. 61
Moorlane Co., The
Morris, I. P. & De La Vergne, Inc.
Muller Co., The John
Munn & Co. 248
Muskogee Iron Works
Myers, F. E., & Bro. Co. 250

N

National Lead Co.
National Petroleum Engineering Co.... 250
National Supply Co. 123
National Tank Co.
National Tool & Metals, Inc. 180
National Transit Pump & Machine Co. 57
National Tube Co.
Natural Gas Equipment Co. 147
Naylor Pipe Co. 23
Neilan, Schumacher & Co.
Nitrose Co., The
Norris Bros., Inc.
North American Car Corp.
Northern Pump Co.
Novo Engine Co.
Nye Tool & Machine Works

O

Oakite Products Co. 188
O'Brien Steel Construction Co. 240
Ohio Injector Co., The
Oil Conservation Engineering Co., The.. 229
Oil Countries Specialties Mfg. Co., The
Oil Insurance Assn.
Oil Well Improvements Co.
Oil Well Supply Co. 10
Oklahoma Contracting Co.
Oklahoma Gas & Electric Co.
Oklahoma Portland Cement Co.
Oster Manufacturing Co., The 151
Oxweld Acetylene Co. 14

P

Page & Hill Co. 225
Panyity, L. S.
Parkersburg Machine Co. 246
Parkersburg Rig & Reel Co. 95
Parmenter & Selby
Parsons Co., The
Patrick, R. S.
Patterson-Ballagh Corp. 116-117
Pattin Bros. Co.
Penberthy Injector Co. 55
Petroleum Engineering Corp.
Petroleum Equipment Co.
Petroleum Iron Works Co.
Pforzheimer, Carl H., & Co.
Phillips Petroleum Co.
Pittsburgh Equitable Meter Co.
Pittsburgh Screw & Bolt Corp.
Pittsburgh Steel Products Co.
Pittsburgh Valve, Foundry & Construction Co.
Podbielniak, W. J.
Pomona Pump Co.
Powell, William, Co.
Power Piping Co.
Prescott Co., The
Pressed Steel Car Co.
Prest-O-Lite Co., Inc., The
Protective Metals, Inc.
Public Service Co.
Pure Oil Co.
Pyle National Co. 189

R

Raigorodsky, P. M.
Reading Iron Co.
Reading Steel Casting Co., Inc. 226
Reece Wooden Sole Shoe Co., Inc.
Reed Roller Bit Co. 13

R

Refinery Supply Co., The 238
Regan Forge & Engineering Co. 133
Reid, Joseph, Gas Engine Co. 125
Republic Iron & Steel Co. 152
Republic Supply Co.
Robinson Orifice Fittings Co. 143
Ross-Meehan Foundries Co. 248
Ryerson, Joseph T., & Son, The 248

S

Safety Gas Main Stopper Co. 248
St. Louis Surfacer & Paint Co.
Schramm, Inc. 223
Selden Co., The
Shaffer Oil & Refining Co.
Shaw, S. F.
Sheldon Machinery Corp.
Shell Petroleum Corp.
Sherwin-Williams Co.
Shippers Car Line Corp.
Shreveport-El Dorado Pipe Line Co., Inc.
Sinclair Refining Co. 203
Sivyer Steel Casting Co.
Skelly Oil Co.
Smith, A. O., Corp.
Smith Engineering Co. 149
Smith Co., E. M. 78-79
Smith, H. C., Mfg. Co., Inc. 97
Smooth-On Mfg. Co.
South Chester Tube Co. 239
Southern Cornice Works 248
Southwestern Engineering Corp. 51
Southwest Welding & Mfg. Co.
Spang & Co.
Spang, Chalfant & Co., Inc. 162
Spengler Tool Co. 2
Springfield Wagon & Trailer Co.
Standard Power Equipment Corp.
Standard Steel Works
Star Drilling Machine Co.
Starrett Co., The L. S.
Steiner, George
Stockham Pipe & Fittings Co. 164
Stoody Co. 141
Stork Engineering Co.
Strong, Carlisle & Hammond Co., The.. 67
Strong Oil Tool Co. 71
Struthers-Wells Co.
Sullivan Co., The
Sullivan Machinery Co.
Sun Shipbuilding & Drydock Co.
Sureshot Torpedo Co.
Swedish American Prospecting Corp.

T

Taubman Supply Corp.
Taylor Instrument Companies
Templeton, Kenly & Co., Ltd.
Terry Steam Turbine Co., The
Texas Creosoting Co. 234
Texas Power & Light Co.
Timken Roller Bearing Co. 21
Titusville Iron Works Co., The 25
Toledo Pipe Threading Machine Co., The 177
Trackson Co. 37
Transcontinental Oil Co.
Trimont Mfg. Co. 216
Truman-Smith Construction Co.
Tube Turns, Inc.
Tulsa Boiler & Machinery Co.
Tulsa Chamber of Commerce
Tulsa Sheet Metal Co.
Twin Disc Clutch Co.

U

Union Carbide & Carbon Corp. 14
Union Chain & Mfg. Co., The 22
Union Mfg. Co. 212
Union Wire Rope Co. 26
Universal Engineering Co.
Universal Oil Products Co. 100-101

V

Vallez Rotary Filter Co.
Vez Co., The 65
Victaulic Co. of America 24
Victor Balata & Textile Belting Co. 175
Victor Welding Equipment Co.
Vogt, Henry, Machine Co.

W

Wagner Electric Corp. 18
Wailes, Dove-Hermiston Corp. 179
Wall Rope Works, Inc. 232
Walworth Co. 1
Warren Petroleum Co.
Washburne, Chester W. 248
Waukesha Motor Co. 104-105
Westco-Chippewa Pump Co.
Westcott Valve Co.
Western Gas Construction Co., The
Westinghouse Electric & Mfg. Co., The..
West Texas Utilities Co. 228
White Co., The 215
Wickwire Spencer Steel Co. 19
Wico Electric Co. 155
Wiemann-Kammerer-Wright, Inc.
Wilgus Mfg. Co., The
Williamette Erated Co.
Williams Bros., Inc. 15
Williamsport Wire Rope Co.
Williams Tool Corp. 151
Wilson-Snyder Mfg. Corp.
Wilson Welder & Metal Co., The
Winkler-Koch Engineering Co., The....
W-K-M Co., The
Wood Shovel & Tool Co., The
Worthington Pump & Mchy. Corp.
Wright Mfg. Co.
Wyatt Metal & Boiler Works

Y

Yale & Towne Mfg. Co.

Z

Zero Hour Torpedo Co., The
Zwetsch, Heinzelmann & Co.

The OIL and GAS JOURNAL

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TABLE OF CONTENTS

SPECIAL ARTICLES

Prosperity Within Grasp of Industry 43
By Andrew M. Rowley
Real effort at curtailment of manufacture of gasoline to back up producers of crude will insure stabilization.

Refiners Accept Wilbur's Principle 45
By A. E. Mockler
Show Sunday shut-down impracticable but promise proportionate curtailment.

Gasoline Weakness California Peril 45
By L. P. Stockman
Marketing situation adds to crude difficulty there.

No Decline in March Refinery Runs 46
By W. T. Ziegenhain
Kansas, West Texas and Oklahoma plants increase schedules.

Advocate Change in Marketing Policies 47
By C. O. Willson
Western Refiners Association discusses problems at Shreveport.

Cracking California Gas Oil and Fuel Oil 48
By Gustav Egloff
Rate of cracking on Pacific Coast increased 57 per cent.

Equipment Show Stirs Wide Interest 49
By L. P. Stockman
Los Angeles oil exhibition to present newest appliances.

Reeser Urges California to Co-operate 50
By E. B. Reeser
Tells State association conservation is worth while from every point of view.

President Roy B. Jones' Annual Address 50
By Roy B. Jones
Asks Western Refiners to co-operate on their problems.

The Government's Warning (Editorial) 52

Losses in Natural Gasoline Shipments 54
By Emby Kaye

Depreciation of Refinery Equipment 54
By H. W. Camp and L. D. Mann

Decomposed Chert Forms Mud Material 85
By L. G. E. Bignell
Deposit near Rogers, Ark., milled into substance to increase weight of circulating fluid.

Pipe Line Construction News 86

Detailed Field Operations in February 88

Bureau of Mines Report for January 89

Field Problems and Their Solution 112

Tideland Development in California 114
By Frank A. Morgan

California May Yield Eight Billion 124
By J. E. Eaton

Use of Liquefied Gas on West Coast 126

Kettleman Hills Stirs Grave Concern 130
By L. P. Stockman

Submarine Geology Opens Possibilities 132

California Has Great Oil Reserves 134
By L. P. Stockman

Operators Solve Waste Water Puzzle 136

Men Prominent in California Oil Industry 140-165

Mechanics of California Production Curve 174
By Stanley C. Herold

Oxy-acetylene Welding 211
By G. O. Carter

California Production by Fields 229-232

New Lease Rules in New Mexico 237
By T. R. Ingram

FIELD OPERATIONS

Late Fields 56

Oklahoma, *By W. A. Spinney* 58

Kansas, *By W. A. Spinney* 60

North Louisiana-Arkansas, *By D. H. Bancroft* 63

Southwest Texas, *By B. D. Stevenson* 64

Gulf Coast, *By Neil Williams* 66

Rocky Mountain Area, *by T. R. Ingram* 68

Michigan, *By Special Correspondent* 69

California, *By L. P. Stockman* 70

Canada, *By Victor Lauriston* 70

Central West, *By Whit* 77

Kentucky-Tennessee, *By Whit* 77

Eastern Fields, *By D. S. Wakenight* 80

West Texas, *By L. E. Bredberg* 83-214

North Texas and Panhandle, *By L. E. Bredberg* 84-214

East Central Texas, *By L. E. Bredberg* 169

REFINING AND MARKETING

Trend of Prices Slightly Downward 44
By W. T. Ziegenhain
Expect large movement of gasoline soon as prices are stabilized.

Technical Questions Answered 106
By Dr. C. K. Francis

Chicago Week-End Consumption Good 194
By J. B. Waldo

Weakness in Eastern Refined Market 195
By A. E. Mockler

Natural Gasoline Manufacture 197

Brief Items for Petroleum Refiners 198

Refinery and Crude Prices 200-201

Tank Wagon Quotations 202

Of Interest to Sales Departments 235

ARTICLES OF GENERAL INTEREST

The Advertisers' Index 41

Men Known in Oildom 92

Equipment and Supplies 94-96-99-102

Natural Gas Developments 109

Classified Want Advertisements 192-193

Oil Securities Market 204-205

Crude Petroleum Statistics 252

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Refinery Section Starts on Page 194

Prosperity Within Grasp of Industry

Highest daily average estimated total production in 1929, week ended Aug. 24, 2,975,435 bbls. Lowest in 1929, Dec. 27, 2,595,320 bbls.

Real Effort at Curtailment of Manufacture of Gasoline to Back up Producers of Crude Will Insure Stabilization

By Andrew M. Rowley

Highest daily average estimated light oil production in 1929, week ended Sept. 14, 2,534,524 bbls. Lowest in 1929, Apr. 13, 2,142,036 bbls.

The petroleum industry is in a better position now to enjoy a measure of prosperity during 1930 than it has been for many months. Whether it does depends largely upon the refining industry, especially the larger companies. And it depends very materially upon what interpretation these large companies place on the extent of their curtailment programs. The present movement, recommended by the chairman of the Federal Oil Conservation Board, to reduce refinery operations must have the sincere and whole-hearted support of every large refiner and importer of both crude and refined products in order to be entirely successful and effective. The excess of gasoline stocks is a condition and not a theory and the entire producing industry realizes now the effect of a weak gasoline market on the crude oil price structure.

The substantial decrease recorded in crude oil production during the past two weeks, totaling a daily average of 160,000 barrels, is conclusive evidence producers are endeavoring to do their part in the stabilization of the industry. If the refining industry succeeds in reducing runs to stills one-seventh and the same basis of curtailment is applied to shipments of gasoline from California and to imports of crude oil and refined products there is every reason to expect a strong, healthy market for both crude oil and gasoline at the beginning of the main consuming season. It is important that each company realize this situation and then take immediate action as an individual organization.

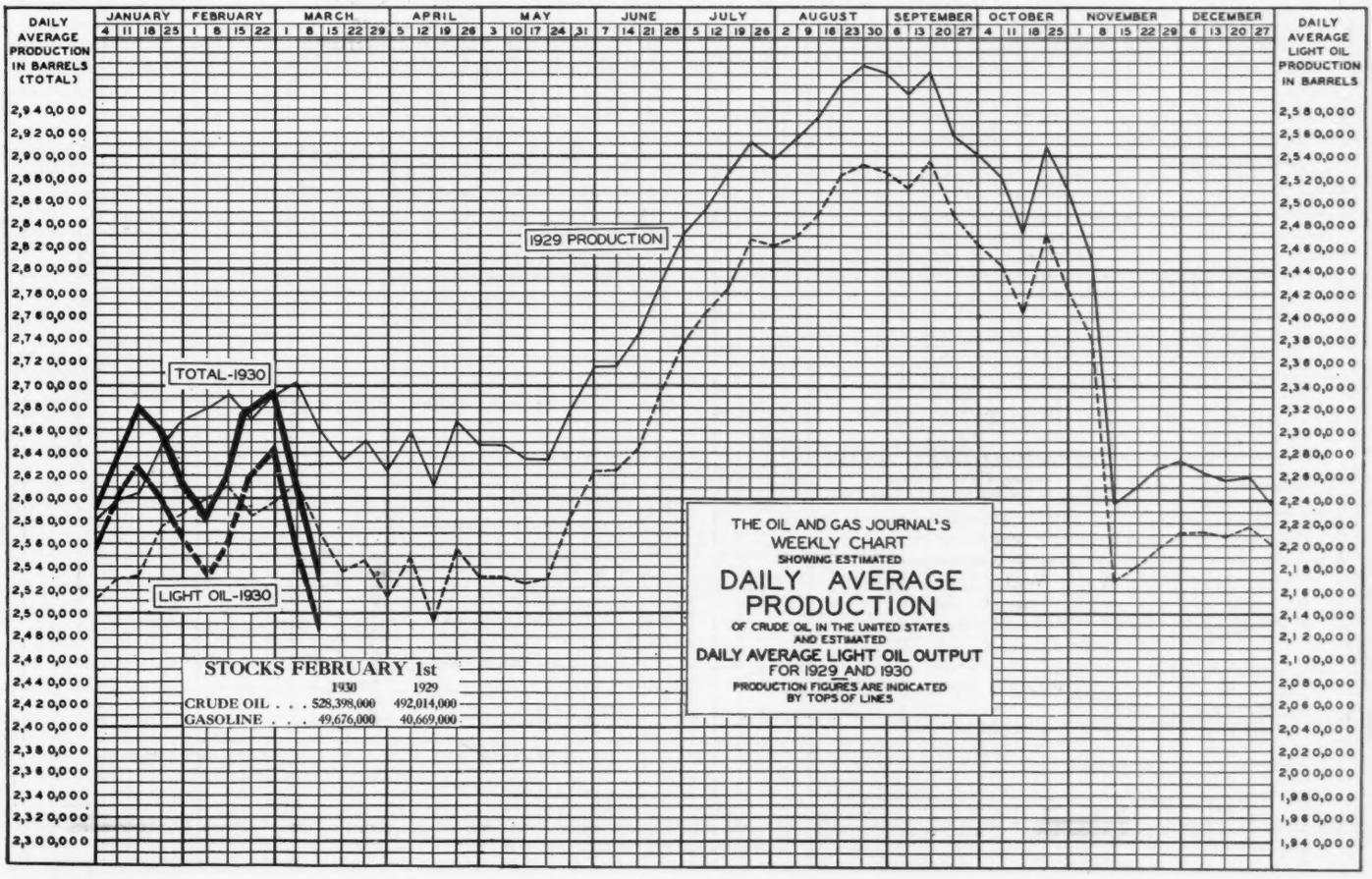
While considerable progress has been made in California in reducing crude oil production the situation there is complicated by great weakness in the gasoline market and the lowering of prices by retailers. It is a good example of what other sections of the country may experience later this year unless there is a material reduction in the quantity of gasoline in storage.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended March 8, and a comparison with the previous week follows:

	March 8		March 1	
	Light	Heavy	Light	Heavy
Oklahoma—				
Oklahoma City	62,985	.....	83,860	.....
St. Louis-Pearson	43,570	.....	43,285	.....
Seminole	210,320	.....	205,560	.....
Northern miscellaneous	230,740	.....	228,335	.....
Southern fields	55,930	.....	55,475	.....
Total Oklahoma	603,545	.....	616,515	.....
West Texas—				
Hendricks	92,040	.....	91,425	.....
Yates	140,290	.....	140,510	.....
Remainder	110,094	.....	110,960	.....
Total West Texas	342,424	.....	342,895	.....
North Louisiana	36,695	5,050	36,775	5,020
Arkansas	16,900	41,205	16,850	41,660
North Central Texas	131,001	.....	130,990	.....
Texas Panhandle	86,995	.....	89,050	.....
East Central Texas	26,019	.....	25,786	.....
Kansas	113,540	.....	114,520	.....
Total Mid-Continent area	1,357,119	46,255	1,378,381	46,680
Gulf Coast	.....	205,315	.....	203,897
Southwest Texas	.....	64,471	.....	62,794
Eastern	135,000	.....	136,000	.....
Rocky Mountain area	69,898	.....	78,446	.....
California—				
Santa Fe Springs	160,000	.....	165,000	.....
Long Beach	107,000	.....	111,000	.....
Huntington Beach	34,000	.....	41,000	.....
Elwood	36,500	.....	40,000	.....
Ventura Avenue	45,000	.....	54,000	.....
Seal Beach	26,000	.....	29,000	.....
Remainder of State	163,250	88,500	175,000	103,000
Total California	571,750	88,500	615,000	103,000
Total United States	2,133,767	404,541	2,202,827	416,371
Grand Total		2,538,308		2,619,198

→ **Total Decrease, 80,890 Bbls.; Light Oil Decrease, 69,060 Bbls.** ←



Trend of Prices Is Slightly Lower

Expect Large Movement of Gasoline Soon as Prices Stabilized. Fuel Quotations Slightly Lower. Neutrals Scarce

By W. T. Ziegenhain

The belief that jobbers will place large orders for gasoline just as soon as there is definite evidence that the market has been stabilized, offered the only bit of encouragement in the Oklahoma refined oil market during the past week.

Gasoline continued to be quoted over a wide range of prices while price revisions in kerosene, distillates, gas oil and fuel oils pointed slightly downward. There was a strong demand for certain grades of neutrals which supported a substantial advance in the prices on several grades but cylinder stocks, and bright stocks showed evidence of possible weakness in the near future. Wax prices remained unchanged.

Outlook for Exports

A number of refiners in all Mid-Continent refining areas have been making shipments on their contracts with exporters. As explained in these columns last week this business for March will total in excess of 15,000,000 gallons. The purchases were for 390 and 375 endpoint material, the former based on the present prices at the Gulf Coast, netting the refiners 7¼ cents and 7½ cents for the latter, basis North Texas.

Gasoline Stocks High

With gasoline stocks at 49,676,000 bbls. on February 1, or 49 days' supply, compared with 40,669,000 bbls., or 46 days' supply a year ago, refiners in the Mid-Continent are mindful of the importance of limiting their present operations. However, March crude runs will be approximately 12,000 bbls. higher than February and about 16,000 bbls. more than a year ago so there is little comfort in the present situation.

While crude prices are at their present low level, refiners in the Mid-Continent are tempted to maintain their crude runs despite the correspondingly weak refined oil market. The question is ever present, "Shall we submit to the belief that our logical marketing territory is limited to the Middle Western states and reduce our runs accordingly, or may we continue to expect to supply a large portion of the gasoline moving for export from the Gulf Coast and supply Ohio, Wisconsin, Michigan, Indiana and eastern Illinois in direct competition with the Chicago group of refiners?"

The problem is entirely one involving relative transportation costs. The rapid expansion of refining facilities in the Gulf Coast refineries has certainly tended to decrease the volume of export material supplied by Oklahoma and North Texas plants. This condition may become even more apparent this year due to the increased capacity of the plants there. Similarly, there has been a substantial increase in the capacity of the plants in the Chicago area. The new plant of the Empire in East Chicago has started operations and its capacity will be increased to 25,000 bbls. in the immediate future. The refineries of this group have increased their crude capacity and their cracking facilities by 55,000 bbls. since a year ago.

Thus, the Mid-Continent refiner is feeling the competition of the Chicago and Gulf Coast groups more forcefully each year and the thought of curtailing refinery runs involves more than attempting to rectify a temporary condition of an oversupply. It might mean a permanent loss of gallonage, profitable or unprofitable, which the Mid-Continent refiners need to hold if crude runs are to be maintained.

Gasoline

U. S. Motor gasoline was moving out of Oklahoma at prices ranging from 5¾ to 6½ cents. A wide range of prices existed on the other grades as well. Some believe the market will be stabilized at 6 cents in the near future and that jobbers will enter the market and buy for storage. As soon as the movement increases and there is some relief with respect to storage, the distress material

(Continued on Page 210)

REFINED MARKET BAROMETER

The general trend in refinery prices continued downward and the movement slow in most refining sections during the past week but with a stabilization of prices, which appears likely in the immediate future, jobbers are expected to call for large volumes of gasoline to replace the present practice of hand-to-mouth buying. Natural gasoline was more freely offered in California at lower prices but the Mid-Continent price level remained unchanged. Kerosene was slightly weaker but prices were not sufficiently low to attract export buyers. Cylinder stocks and bright stock were also offered in larger volumes and prices in the East continue to move downward. This, in turn, is causing the Mid-Continent market some concern despite the fact there has been no change in the general Mid-Continent quotations. Several grades of neutrals were advanced in the Mid-Continent with the balance of the lub market unchanged. Wax prices were also unchanged. Fuel oils and distillates were quoted at prices slightly under those of a week ago, reflecting the declining seasonal demand.

Oklahoma—A wide range of prices were quoted on gasoline and the market at present is weak but many believe prices are on the bottom and jobbers will enter the market for storage. Fuel oil prices were lowered while distillates and kerosene remained weak. Several grades of neutrals were scarce and prices were advanced but the balance of the lub market, including bright stocks and cylinder stock, showed signs of a possible future weakening.

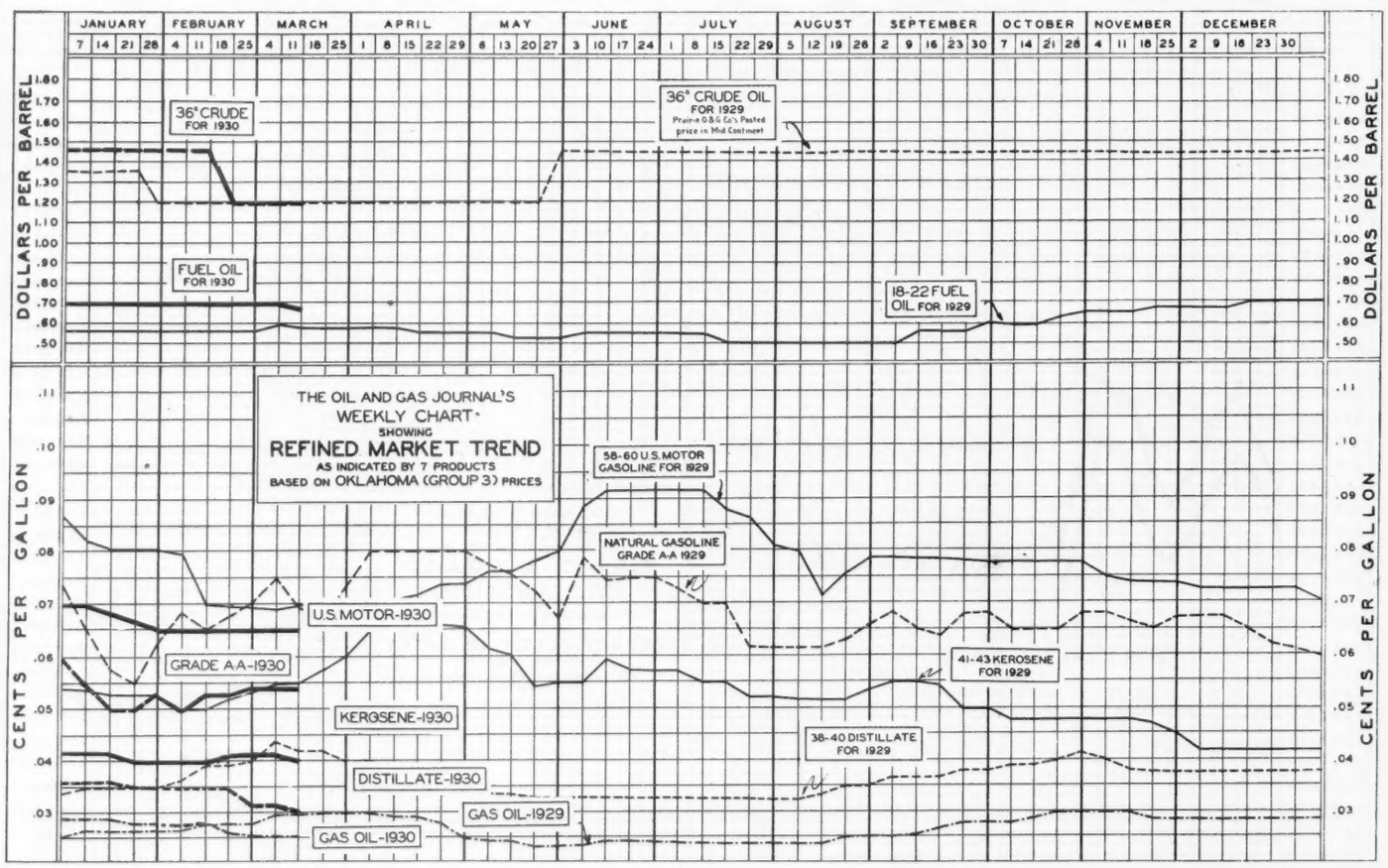
Atlantic Seaboard—A general weakness continued but the prospects of stabilizing the market as a result of curtailing refinery operations seemed very promising. Prices were lowered on bright stock and a large supply continued to be available. The balance of the list of commodities showed no price changes.

Chicago—Gasoline moved in larger quantities and a more optimistic view was taken of the immediate future of that market. Fuel oils and distillates were offered more freely and generally sold below the previous week's price level.

California—Natural gasoline prices were lowered. Substantial reductions were made in the kerosene and distillate prices while the balance of the market remained unchanged.

Gulf Coast—There was no change in the Gulf Coast market.

Pennsylvania—The gasoline market continued weak and slightly lower prices were quoted on several of the list of lubricants. The trend in bright stock prices seems to continue to point downward.



Refiners Accept Wilbur's Principle

Bulk of Manufacturers, While Showing Sunday Shutdown Impracticable, Promise Proportionate Curtailment in Production

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, Mar. 10.—Oil company executives making their headquarters in the East have received with mixed sentiments the suggestion of the Federal Oil Conservation Board that petroleum refiners suspend operations on Sunday of each week as a curtailment measure to correct the current condition of overproduction in the industry, and permit the reduction of surplus stocks of motor fuel. The consensus appears to be that while the proposal for a complete cessation of operations on Sundays is not practicable, because of the peculiarities of oil refinery operation which require continuous operation in many departments, the spirit, if not the letter, of the suggestion will be adopted through restriction effecting a reduction of one-seventh in production of gasoline and other refined products. To assure full success from the undertaking, however, it would appear logical to expect a corresponding reduction in shipments of South American crude and products, and California gasoline as well, into East Coast markets during the period of curtailment.

General sentiment among oil leaders here is that the suggestion calls for the individual adaptation of the operations of each refining company to the point where the spirit of the Sunday shutdown suggestion is adopted through reducing runs, and it is probable that the program will be worked out along these lines.

Positions of individual companies in this respect vary widely. Some refining organizations state they have already cut production to the point where their stocks are down to 1929 levels, and under that point in some instances, and refiners in this class believe that these companies which have not yet curtailed to this extent are the logical ones to get the "one-seventh reduction" campaign under way by curtailing operations. This sentiment finds expression in the statement that refining organizations, as a matter of general policy, should clean house in order to get their production down within the limits of well defined markets for their production and their surplus stocks down to comparable 1929 levels or under.

New Jersey Statement

Standard Oil Co. of New Jersey, which has taken the lead in a movement to bring about stabilization in the oil industry, has endorsed, in principle, the recommendations of the Oil Conservation Board and has announced its intention of adopting the suggestion in its refinery operations, where physical conditions make this practicable. Walter C. Teagle, president of the New Jersey company, in a statement on the curtailment plan, says:

"The Federal Oil Conservation Board has suggested that gasoline refining operations be put upon the basis of a six-day week in order that the waste incident to the increasing of surplus stocks may be avoided.

"Certain operations of the oil industry, such as drilling, producing, construction and pipe line transportation are susceptible to one-day closing. In as much as oil refining is a continuous operation it is not practicable to completely shut down for one day each week, but the same results will be accomplished if the week's operations are reduced one-seventh in volume.

"Accordingly, beginning March 9, and thereafter until further notice, the Standard Oil Co. of New Jersey will reduce its refinery operations one-seventh in volume. This involves a corresponding reduction in the company's receipts of crude oil, and since manifestly it would be unjust to discriminate between domestic and foreign producers, this reduction will apply alike to domestic crude and to imports of crude and products.

"Throughout the company's operations a six-day week is already in effect, and where through the nature of the business Sunday employment is necessary with certain employes a day's rest is accorded during the week. This curtailment in operations will involve no reduction in personnel or payrolls.

"This step is taken as an aid in relieving the present situation of overproduction of crude and gasoline by the industry as a whole, although the Standard Oil Co. of New Jersey has not itself accumulated an excess of crude and gasoline and its operations have for a long time been in balance."

Tide Water's Views

Axtell J. Byles, president of the Tide Water Associated Oil Co., endorses the one-seventh curtailment plan, with the suggestion that this curtailment be made applicable to all divisions of the domestic industry and imports as well. Mr. Byles' statement follows:

"I heartily approve of the suggestion of the Federal Oil Conservation Board to reduce refinery production one-seventh. As a practical matter, certain refinery operations cannot be discontinued one day each week, but the desired result would be accomplished by decreasing throughput one-seventh. To effect real conservation, this movement should extend back to the well, otherwise already overburdened crude storage would be increased. In fairness to the American producer of crude oil and gasoline the same formula should be applied to imports. This program carried out for 60 days would go far toward correcting the present situation."

Holmes Sees Difficulties

Any attempt to check the present situation through regulation of refinery runs or gasoline stocks would appear to lead into almost insurmountable technical and legal difficulties, in the opinion of R. C. Holmes, president of The Texas Corporation, who reiterates his statement made last year that solution of the overproduction muddle rests with curtailment of crude output by California and Texas. President Holmes, in his statement, says:

(Continued on Page 208)

Gasoline Weakness California Peril

Marketing Situation Adding to Difficulty of Correcting Crude Conditions on Pacific Coast

By L. P. Stockman

LOS ANGELES, Calif., Mar. 10.—Although considerable progress has been made during the past week in furthering California's curtailment program which contemplates the immediate reduction of crude oil production to 609,000 bbls. per day in order to effect stabilization, the situation is still critical despite statements of prominent officials that the outlook is hopeful. Crude oil production has been substantially reduced as a result of curtailment work undertaken during the past few weeks and while a further reduction will be made within the next 15 days marketing conditions on the other hand have shown a very definite weakening. The significance which attaches to this is that major companies can not possibly maintain existing crude oil price schedules if the bottom drops out of the refined oil market. During the past month independent refiners have made further serious inroads into the sales of major companies by distributing gasoline from 1 to 5 cents a gallon below standardized quotations.

A gasoline war of some intensity has been raging in Portland, Ore., and Seattle, Wash., for several days and at last reports gasoline was retailing at several sections in the former city for as low as 12½ cents per gallon, tax included. This represents a drop of more than 7 cents a gallon in less than a week and is 5 cents a gallon lower than the general prevailing price of 17½ cents. Before this competitive selling campaign started, gasoline was retailing in Portland and Seattle for 20½ cents per gallon, tax included.

Price Cuttings

California has been relatively free from indiscriminate price cutting, although it is generally known that service station operators have been selling below the posted price for several weeks. Heretofore the major companies have requested their resellers to maintain a set price in order to stabilize conditions but word was passed around a few days ago that major companies were no longer interested in the service station price. As a result of this a number of service stations immediately cut the retail price in Los Angeles territory from 19½ cents a gallon to 16½ cents per gallon. Within a short time, however, this group pulled in their new signs and restored the old price. The position assumed by a number of the major companies that they are only interested in tank wagon prices which they post is economically sound, but at the same time if the way is left open for their resellers to retail at their own price in order to meet competition of independent refiners it may lead to trouble unless the service station operators get together themselves and agree on a stabilized price. The difficulty in this direction lies in the fact that a number of independent refiners are permitting their resellers to retail gasoline in Los Angeles territory for 16½ cents per gallon or less by cutting the tank wagon price, whereas resellers handling products of the major companies are quoting gasoline at 19½ cents a gallon. The result of this is that many resellers are pushing the sales of independent gasoline to the detriment of gasoline made by major concerns. The seriousness of such a situation is quite obvious especially in view of the large number of cut rate signs on independent gasoline in southern California.

The situation in a nutshell resolves itself into just how long will the major companies tolerate independents to undersell them without taking action to meet this competition. The major refiners tried to do this once before, but were forced in the end to cut gasoline prices. The question is can they do it this time by purchasing this distress gasoline or will they be forced to retaliate. Previous experience has indicated the futility of attempting to stabilize an overloaded market and, while this is generaly recognized, the major companies are making every attempt to stabilize present conditions notwithstanding they are taking an awful licking in the battle for gallonage.

Refinery Operations Reduced

All of the major California refiners have reduced refinery operations to a six-day basis by cutting runs to stills one-seventh in an effort to effect stabilization. Refinery operations being necessarily continuous, this reduction in runs to still will be accomplished without reducing the present personnel. The Standard, Union, Shell, General Petroleum, Associated, Macmillan Petroleum and the Petrol Corp. have already effected the reduction in refinery runs and a number of others are making preparations to follow a similar procedure. By reducing the amount of gasoline produced, major companies may be able to effect stabilization by purchasing excess gasoline production of independent refiners in order to make up for any deficiency resulting from their decreased runs to stills.

It is obvious, of course, that this practice will not accomplish the desired result unless all refiners, both large and small, reduce the amount of charging stock run to stills. It is probable that gasoline prices will either be stabilized or another gas war precipitated within the next few weeks. If independent refiners continue to allow a tank wagon price below that of the major companies the latter group must of necessity meet competition because if they don't service station operators will naturally push the brand of gasoline which allows the largest differential.

California Crude Prices Increased 25 Cents Per Bbl.

SAN FRANCISCO, Calif., Mar. 11.—The Standard Oil Co. of California announces, effective today, increases in its offered price for California crude oil at the well amounting to 25 cents per barrel on higher grades with diminishing increases for lower gravities; also an advance of 5 cents in heavy crudes of San Joaquin Valley 14 gravity and over. The advance is made possible through present conditions which for the first time in several years have brought crude oil production virtually in balance with demand.

Gasoline prices for all forms of delivery are reduced 1 cent per gallon at Portland, Ore.; Seattle and Spokane, Wash., and 2 cents at Tacoma, Wash., by the Standard Oil Co. of California.

No Decline in March Refinery Runs

Kansas, West Texas and Oklahoma Plants Increase Crude Schedules Despite Weak Refined Oil Market

By W. T. Ziegenhain

Refinery crude runs in the Mid-Continent will increase approximately 12,000 bbls. during March compared with those of February and will be 16,000 bbls. higher than a year ago. Kansas, Oklahoma and West Texas refineries account for the increase as reductions are shown in North Louisiana and North Central Texas. The total Mid-Continent crude runs will average 531,500 bbls. daily during March while a year ago the average is shown as 514,950 bbls.

RUNS TO STILLS AT MID-CONTINENT REFINERIES

1928	
January 1	415,125
February 1	418,275
March 1	427,145
April 1	451,225
May 1	479,225
June 1	487,135
July 1	506,310
August 1	543,625
September 1	563,270
October 1	547,820
November 1	550,000
December 1	520,000
1929	
January 1	508,550
February 1	506,800
March 1	514,950
April 1	530,530
May 1	577,500
June 1	585,030
July 1	565,800
August 1	555,250
September 1	552,300
October 1	544,720
November 1	545,473
December 1	540,630
1930	
January 1	535,460
February 1	519,355
March 1	531,500

The increase over February might be termed normal because of the coming season of increased gasoline consumption, except for the fact there is already sufficient stocks of gasoline accumulated to make the load burdensome. Similarly, the present refined oil price structure is not conducive to running more crude. These facts are generally known but there has been no general curtailment of operations to date. This is due to various factors. The reason given in some cases is that present runs are required to take care of the current business. In other cases it was pointed out that the gasoline in storage was made from high priced crude and it appeared advantageous to lower the average price of all stocks by continuing to accumulate stocks, the gasoline now being made from low priced crude.

MID-CONTINENT REFINERY OPERATIONS
(Based on operations—March 1, 1930, and February 1, 1930)

Districts—	No. of plants Mar. 1	Daily crude cap. (bbls.)	Daily crack cap. (bbls.)	Plants oper. Mar. 1	Runs to stills Mar. 1	Plants oper. Feb. 1	Runs to stills Feb. 1	Daily inc. Mar. 1
Arkansas	9	44,800	13,150	7	29,550	8	30,355	*805
Kansas	15	130,500	73,850	15	95,400	15	86,700	8,700
North Louisiana	6	58,700	23,500	5	33,150	6	38,500	*5,350
Oklahoma	45	307,800	116,750	42	198,150	41	193,750	4,400
North and Central Texas	36	166,700	25,000	32	99,900	32	100,200	*300
West Texas	29	145,000	53,850	26	75,350	25	69,850	5,500
Total	140	853,500	306,100	127	531,500	127	519,355	12,145

*Decrease.

Oklahoma

An increase of 4,400 bbls. is shown in the crude runs for the Oklahoma group of refineries. Except for the resumption of operations of the Wilcox Oil & Gas Co.'s plant at Bristow, there was no change in the status of the operating and non-operating plants.

Kansas

Kansas refiners will increase the crude runs in that area 8,700 bbls. during March, the largest increase shown for any of the groups in the Mid-Continent. The increased schedule of the Kanotex Refining Co. accounts for a portion of this but increases are also shown in a number of other plants. It is interesting to note that with this increase, the runs in this area will closely approximate those of the North Central Texas area in which there are more than double the number of plants.

North Central Texas

Practically no change is shown in the crude runs of the North Central Texas group of refineries. Two plants will be shut down during March, the Star Refining & Producing Co.'s 1,800-bbl. plant at Fort Worth and the Orient Petroleum Co.'s 2,500-bbl. plant at Wichita Falls. The decrease in the crude runs due to these plants shutting down is equalized however by the resumption of operations in the Taxman Refining Co.'s plant at Wichita Falls.

West Texas

An increase in the crude runs of the West Texas plants amounting to 5,500 bbls. daily for March is accounted for by the increased schedules of a relatively few plants. This increase was partly accounted for also by the starting up of the Amarillo Producers & Refiners Corp.'s plant in Pyote. The refinery will remain shut down until about March 10 after which a schedule of runs of approximately 1,500 bbls. daily will be maintained.

North Louisiana

A reduction of 5,350 bbls. is shown in the North Louisiana refineries for March, practically all of the reduction being due to temporarily shutting down The Texas Company's plant in Shreveport.

Arkansas

The crude runs in the Arkansas plants show a decrease of 805 bbls., and may be accounted for by shutting down of the James B. Berry & Son's plant at Waterloo.

REFINERY OPERATIONS IN OKLAHOMA
(Plants which have been in operation during the past year)

Name and address—	Daily capacity	Runs Mar. 1	Runs Feb. 1
Anderson-Prichard Oil Co., Cyril	4,000	4,500	4,000
Barnsdall Refineries, Inc., Barnsdall	6,000	4,000	4,000
Barnsdall Refineries, Inc., Okmulgee	10,000	4,000	3,000
Bell Oil & Gas Co., Grandfield	4,500	3,300	2,500
Champlin Refining Co., Enid	16,000	8,000	8,000
Citizens Refining Co., Seminole	1,000	100	100
Continental Oil Co., Sapulpa	10,000	1,500	2,000
Continental Oil Co., Ponca City	30,000	16,000	16,000
Cushing Refining & Gasoline Co., Blackwell	1,800	1,000	1,000
Cushing Refining & Gasoline Co., Cushing	3,500	2,000	2,000
Eason Oil Co., Enid	5,000	1,800	2,000
Empire Oil & Refining Co., Cushing	5,000	4,700	4,700
Empire Oil & Refining Co., Okmulgee	4,000	4,000	4,000
Empire Oil & Refining Co., Ponca City	7,500	7,500	7,500
Garber Refineries, Inc., Garber	3,500	2,400	2,000
Globe Oil & Refining Co., Blackwell	7,500	7,000	7,000
Globe Oil & Refining Co., Cushing	15,000	10,000	11,000
Homaokia Oil Co., Allen	3,000	1,200	500
Illinois Oil Co., Cushing	3,000	(*)	(*)
Imperial Refining Co., Ardmore	5,000	2,800	2,800
Independent Oil & Gas Co., Okmulgee	5,000	3,500	3,500
Johnson Oil Refining Co., Cleveland	6,000	5,000	4,500
Mid-Continent Petroleum Corp., West Tulsa	40,000	18,000	18,000
Northwestern Refining Co., Tonkawa	3,000	3,000	3,000
Peppers Gasoline Co., Covington	1,000	750	700
Pierce Oil Corp., Sand Springs	8,000	7,000	6,500
Producers Oil Co., Bristow	2,500	1,500	1,500
Producers & Refiners Corp., West Tulsa	6,000	3,400	3,600
Pure Oil Co., Ardmore	5,000	2,000	2,000
Pure Oil Co., Muskogee	9,000	8,000	8,000
Remington Oil Co., Wewoka	2,000	(*)	(*)
Rock Island Refining Co., Beckett	2,500	1,800	2,000
Shaffer Oil & Refining Co., Cushing	10,000	10,000	10,000
Sun Oil Co., Yale	5,000	4,600	5,000
Sinclair Refining Co., Muskogee	1,000	600	500
The Texas Company, West Tulsa	15,000	15,000	15,000
Texas Pacific Coal & Oil Co., Wynnewood	2,500	(*)	(*)
Tidal Refining Co., Drumright	11,000	10,000	10,000
Transcontinental Oil Co., Boynton	2,500	1,800	1,500
Transcontinental Oil Co., Bristow	5,000	3,500	3,000
Western Oil Corp., Beckett	2,000	1,500	1,500
White Oak Refining Co., Allen	8,000	6,300	7,000
Wilcox Oil & Gas Co., Bristow	5,000	2,000	(*)
Wirt Franklin Petroleum Corp., Ardmore	4,000	2,300	2,400
Yale Oil Corp., Yale	1,500	800	450
Total	310,800	198,150	193,750

*Shut down.

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS
(Plants which have been in operation during the past year)

Name and address—	Daily capacity	Runs Mar. 1	Runs Feb. 1
American Refining Properties, Wichita Falls	6,000	2,400	2,000
Archer Refining Co., Wichita Falls	2,000	700	700
Central Texas Refining Co., Angus	4,000	1,200	1,500
Central Texas Refining Co., Minerva	2,000	600	600
Continental Oil Co., Wichita Falls	6,000	2,900	3,300
Dale Oil & Refining Co., Electra	4,000	2,500	3,400
Empire Oil & Refining Co., Gainesville	5,000	3,300	3,600
Falls Refining Co., Wichita Falls	2,000	1,000	1,000
Gulf Refining Co., Fort Worth	10,000	6,000	6,000
Humble Oil & Refining Co., Breckenridge	2,000	1,500	1,250
Humble Oil & Refining Co., Chilton	4,000	2,500	2,500
Humble Oil & Refining Co., Neches	5,000	600	1,000
Iowa Park Producing & Refining Co., Iowa Park	2,500	1,800	1,250
LaSalle Petroleum Co., Burkburnett (Noble)	3,500	1,500	1,800
Macmillan Petroleum Co., Isom	8,000	6,000	6,000
Magnolia Petroleum Co., Fort Worth	12,000	4,600	4,300
Magnolia Petroleum Co. (White Eagle plant), Fort Worth	6,000	2,500	2,000
Magnolia Petroleum Co., Corsicana	5,000	2,600	2,500
Olney Oil & Refining Co., Olney	2,000	2,000	2,000
Oriental Oil Co., Dallas	5,000	3,300	3,300
Orient Petroleum Co., Wichita Falls	2,500	(*)	800
Panhandle Refining Co., Wichita Falls	5,000	3,300	3,600
Pampa Refining Co., Pampa	4,000	2,800	3,500
Phillips Petroleum Co., Isom	10,000	7,300	8,000
Primrose Refining Co., Wichita Falls	2,500	2,000	1,500
Simms Oil Co., Dallas	5,000	3,400	3,400
Star Refining & Producing Co., Fort Worth	1,800	(*)	800
Superior Refining Co., Tiffin	2,000	(*)	(*)
Tarrant Refining Co., Grand Prairie	2,500	(*)	(*)
Taxman Refining Co., Wichita Falls	2,500	2,000	(*)
The Texas Company, Dallas	16,000	16,000	16,000
The Texas Company, Amarillo	4,000	3,000	3,000
Tidall Western Refining Co., Burkburnett	3,000	2,000	2,000
Texas Pacific Coal & Oil Co., Fort Worth	3,000	2,300	1,800
Transcontinental Oil Co., Fort Worth	5,000	3,500	3,300
Waggoner Refining Co., Electra	3,400	2,500	2,500
Total	166,700	99,900	100,200

*Shut down.

REFINERY OPERATIONS IN KANSAS
(Plants which have been in operation during the past year)

Name and address—	Daily capacity	Runs Mar. 1	Runs Feb. 1
Barnsdall Refineries, Inc., Wichita	4,000	2,000	1,500
Derby Oil Co., Wichita	6,000	3,000	3,000
Eldorado Refining Co., Eldorado	3,500	2,500	2,800
Golden Rule Refining Co., Wichita	1,500	800	800
Kanotex Refining Co., Arkansas City	10,000	6,000	2,000
Independent Oil & Gas Co., Kansas City	6,000	5,000	5,300
National Refining Co., Coffeyville	6,500	6,000	6,000
Peerless Oil Refining Co., Chanute	3,000	1,800	1,800
Shell Petroleum Corp., Arkansas City	22,000	17,000	17,000
Sinclair Refining Co., Coffeyville	10,000	11,000	10,000
Sinclair Refining Co., Argentine	9,500	7,000	7,000
Skelly Oil Co., Eldorado	23,000	13,000	11,500
Standard Oil Co. of Kansas, Neodesha	12,000	8,000	8,000
Vickers Petroleum Co., Potwin	3,500	2,300	2,000
White Eagle Oil Corp., Augusta	10,000	10,000	8,000
Total	132,000	95,400	86,700

*Shut down.

REFINERY OPERATIONS IN NORTH LOUISIANA
(Plants which have been in operation during the past year)

Name and address—	Daily capacity	Runs Mar. 1	Runs Feb. 1
Bayou State Refining Co., Hosston	700	600	500
Crystal Oil Refining Corp., Shreveport	14,000	4,300	4,000
Dixie Oil Co., Superior	3,000	2,800	2,600
Louisiana Oil Refining Co., Shreveport, Bossier	24,000	16,750	16,000
Shreveport, El Dorado Pipe Line Co., Shreveport	10,000	8,700	8,900
The Texas Company, Shreveport	7,000	(*)	6,500
Total	58,7000	33,150	38,500

(Continued on Page 167)

Advocate Change in Marketing Policies

Western Petroleum Refiners Association Discusses Problems at Shreveport Meeting. L. R. Crawford Chosen President

By C. O. Willson

SHREVEPORT, La., Mar. 11.—What was termed "the one price policy" of Mid-Continent refiners was condemned by the executives of several refining organizations in the annual meeting of the Western Petroleum Refiners' Association which convened here yesterday. The discussion of marketing policies of refiners followed the annual address of President Roy B. Jones who devoted a part of his final message to the various marketing problems of the association's membership.

It was contended that the past practice of quoting one price in refinery tank car sales to all buyers regardless of destination had enabled competitive refining groups to encroach on the Mid-Continent marketing territory so that, as a group, refiners had not been able to secure a normal expansion in their operations. Speakers advocated that refiners protect themselves against further encroachment by maintaining one price in their normal marketing territory and another in other areas if necessary to meet competitive conditions. This policy it was said had been followed by other refining groups and similar action on the part of Mid-Continent refiners was necessary as a defensive measure.

REFINERS PAY HONOR TO PRESIDENT JONES

SHREVEPORT, La., Mar. 11. Mid-Continent refinery executives in session here at the annual meeting of the Western Petroleum Refiners Association closed an afternoon devoted to the serious business of solving refinery problems in a lighter vein. The occasion marked the retirement of Roy B. Jones, who for two years has been the popular president of the association. Heading a refinery association is not an easy job as jobs go and realizing this his friends sought to provide comforts for a well-earned rest.

With Fayette B. Dow, Washington counsel, as master of ceremonies, each of the refining groups presented the retiring and tired president with a gift. Oklahoma led with a pair of pajamas. Bedroom slippers, a hot water bottle, etc., followed from the other groups. The occasion was brought to a close when the entire membership presented Mr. Jones with a silver service and a desk.

The discussion was closely linked with a consideration of the plan recently made effective by seaboard refiners who are now basing their gasoline tank wagon and service station prices on a refinery or terminal quotation plus freight to point of consumption. It was predicted that this plan which in effect means quoting a delivered price to the buyer would spread to other sections, supplanting the present practice of quoting one refinery price in tank car sales without the necessary provision for differences in transportation costs.

Election of Officers

In the election which closed the meeting of refinery executives today L. R. Crawford, president of the Producers & Refiners Corp., Independence, Kans., was elected president of the association for the coming year. M. J. Grogan, president of the Louisiana Oil Refining Corp., Shreveport, and George D. Locke, vice president of the Barnsdall Refineries, Inc., Tulsa and Chicago, were re-elected vice presidents. E. H. Eddleman, manager of the oil and refining divisions of the American Refining Properties, Wichita Falls, Tex., was also elected a vice president.

The following were elected to the board of directors: H. T. Ashton, Lubrite Refining Co., St. Louis; C. M. Boggs, Kanotex Refining Co., Arkansas City; T. M. Martin, Lion Oil Refining Co., El Dorado, Ark.; A. L. Derby, Derby Oil Co., Wichita; John L. Gray, Shaffer Oil & Refining Co., Tulsa; C. L. Henderson, Vickers Petroleum Co.; E. J. Marston, Texas Pacific Coal & Oil Co., Fort Worth; E. S. Karstedt, Continental Oil Co., Ponca City; P. J. Gwynn, Iowa Park Producing & Refining Co., Wichita Falls; E. L. Miller, Shell Petroleum Corp., St. Louis; C. C. Smithers, Indian Refining Co., Lawrenceville, Ill.; Sheldon Clarke, Sinclair Refining Co., Chicago; O. L. Cordell, Independent Oil & Gas Co., Tulsa; T. T. Eason, Eason Oil Co., Enid, Okla.; Freeman W. Burford, Burford Oil Co., Tulsa; D. P. Hamilton, Root Refining Co., Shreveport, La.; L. B. McCammon, Transcontinental Oil Co., Tulsa; Harry Trower, Phillips Petroleum Co., Bartlesville, Okla.; F. R. Schneider, Simms Oil Co., Dallas, and L. H. Prichard, Anderson-Prichard Oil Corp., Oklahoma City. Roy B. Jones, Panhandle Producing & Refining Co., Wichita Falls; P. M. Miskell, Empire Oil & Refining Co.; D. W. Moffitt, Mid-Continent Petroleum Corp.; George Moore, Cosden Oil Co., Fort Worth; F. A. Pielsticker, Skelly Oil Co., Eldorado, Kans., and W. D. Richardson, Richardson Refining Co., Fort Worth, as past presidents of the association are also members of the board of directors.

Practical Suggestions

Roy. B. Jones, president of the Panhandle Producing and Refining Co., Wichita Falls, Tex., in an address to executives Monday noon which closed his 2-year service as president of the association, presented a number of practical suggestions relative to the solutions of problems now confronting the refiners of the Mid-Continent area.

After reviewing the past accomplishments of the association and stressing the necessity of continued co-operation in considering matters of mutual importance President Jones discussed several angles of the gasoline situation regarding which he said "The basic problem might be termed the failure of gasoline to adequately contribute to the reasonable profit."

He explained the cause of present low prices of gasoline as a development of last year's operations in which an increase of 12½ per cent in refinery demand was more than provided for in a 15 per cent increase in supply resulting in an increase of 10,000,000 bbls. or 30 per cent in inventories at the end of the year. This 2½ per cent difference in supply and demand he said "small as it may appear when thus expressed, represents a narrow margin that largely decided the issue between success and failure. It would have appeared no greater if deducted from the production program of refiners."

Regarding the code of ethics adopted by the oil industry during the past year and in the formation of which Mr. Jones has had an important part, he said that the elimination of excessive margins by the maintenance of profitable refinery prices would greatly aid in carrying out the code's provisions.

Weighted Average Prices

He advocated a continuance of weighted average prices in published quotations declaring that it tended to minimize the importance of small quantities of cheap material as a market factor. He condemned sales to brokers in so far as they represented speculative activities enabling the broker to undersell the refiners' market.

In regard to changes in prices he advocated more attention to refinery cost accounting as a basis for quotations with the view of ending a situation in which changes are too often dictated by unwise competitive conditions.

Condems Dumping

While not suggesting any definite remedy Mr. Jones condemned the practice of "dumping" excess supplies in the marketing territory of competing groups with the view of protecting local territory.

In contracts between refiners and jobbers he advocated the balancing of supply and demand so that a reasonable refinery price can be maintained, thus permitting stabilized margins between tank car and tank wagon quotations.

In discussing the changes in gasoline specifications and the developments in the motor world which have brought them about, Mr. Jones presented the thought "that a lack of definite knowledge with respect to quality demand may be responsible in a degree for depression in gasoline values." This view was based on the contention that while underproducing with respect to one grade of gasoline a refiner might at the same time be contributing to the overproduction of another grade, resulting in a depressed market in regard to total volume.

As a remedy to this situation he suggested that more information be obtained regarding the supply and demand for particular grades with the view of balancing any inequalities. As a phase of this situation he stressed the necessity of changing specification "in a manner that makes a quality distinction based on the ability of grades of product to perform certain services in their consumption." As a possible practical solution of enabling the consumer to discriminate as to the specifications of products he purchased, he suggested that an artificial color might be used as an index.

The complete text of Mr. Jones' ad- (Continued on Page 207)

WILBUR SELECTS A COMMITTEE TO REPORT ON PETROLEUM ECONOMICS

WASHINGTON, D. C., Mar. 10.—Ray Lyman Wilbur, Secretary of the Interior, as chairman of the Federal Oil Conservation Board, today put into motion machinery for a complete and unprejudiced analysis of the status of petroleum demand for the year 1930. In a letter to five nationally recognized authorities on petroleum matters, Secretary Wilbur asked that they constitute themselves a committee on petroleum economics, make a study and report their findings to the Federal Oil Conservation Board.

J. Elmer Thomas

The members proposed by Secretary Wilbur for this new committee are: J. Elmer Thomas, of Fort Worth, Tex.; Dr. Joseph E. Pogue, of New York; H. W. Lowrie, Jr., of Denver, Colo.; Ray M. Collins, of Tulsa; and H. P. Grimm, of Los Angeles, Calif. Messrs. Collins and Grimm are umpires of production for Oklahoma and California respectively. Mr. Thomas will serve as chairman and Doctor Pogue as secretary.

In his letter to these oil leaders, Secretary Wilbur said: "In performing its function of advising the oil industry and the public, the Federal Oil Conservation Board needs an unprejudiced analysis of the status of petroleum demand. To that end I desire to ask the services of a group of distinguished students of practical economics in making a brief review of the outlook for 1930, utilizing the best statistics available, and reporting its findings to the Federal Oil Conservation Board.

Dr. Joseph E. Pogue

"Two questions present themselves; the first of these is what is the anticipated consumption of refined products? The second is, what amount of crude is necessary to meet efficiently that demand?

"This service solicited from you is in the broader interests of true conservation of a resource in which there is a most active interest."

Cracking California Gas Oil and Fuel

Rate of Cracking on Pacific Coast in 1929 Increased 57 Per Cent Over 1928. Big Gain During Last Six Months

By Gustav Egloff
Universal Oil Products Co. Research Laboratories

During the year 1929, California was the second largest crude and gasoline producing state in the union. It produced 292,000,000 bbls. of crude representing 29 per cent of the total output of the United States, or 20 per cent of the world's oil production. This tremendous yield of oil in 1929 has not been an unalloyed blessing, due to the fact that the markets could not absorb the oil production of the State, hence, large quantities went into storage, particularly gas oil, fuel and heavy crude oil, of which over 146,500,000 bbls. are in storage tanks at the present time.

The California refiner in general has been somewhat loath to put in the cracking process due to a belief that California oils were difficult to crack commercially. However, in 1929 the rate of cracking in California has increased 57 per cent over the year 1928, which is more than double the rate of any other state.

The following table gives the amount of cracked gasoline and the percentage increase of the refining areas of the United States:

CRACKED GASOLINE*
(In thousands of barrels)

	1928	1929	Increase per cent
California	7,378	11,607	57.3
Louisiana-Arkansas	8,141	10,046	23.4
East Coast	21,790	25,790	18.3
Appalachian	4,579	5,390	17.7
Indiana-Illinois-Kentucky, etc.	23,279	27,348	17.5
Texas	30,849	35,481	15.0
Oklahoma-Kansas-Missouri	19,758	20,985	6.2
Rocky Mountain	6,780	7,112	4.9

*Annual Petroleum Statement No. 61 (1929), United States Bureau of Mines.

Increase in Six Months

It is interesting to show the increase of cracked gasoline production in California during the last six months of 1929:

1929—	California cracked gasoline (bbls.)
July	881,000
August	982,000
September	1,049,000
October	1,136,000
November	1,163,000
December	1,266,000

In view of 146,500,000 bbls. of gas oil, fuel and heavy crude oil being in storage and still increasing, the further extension of the cracking process in California is warranted. It is highly economic and true conservation to crack low grade oils into motor fuel in comparison to producing more expensive oil such as crudes having a high content of gasoline.

The cracking process is readily adaptable to the conversion of gas oil, fuel oil, heavy crude or mixtures thereof into high yields of motor fuel and fuel oil passing all market specifications. Or the cracking process may be operated to produce motor fuel, furnace oil and coke, or just two products, motor fuel and coke.

The cracking process is commercially converting Los Angeles Basin topped crude oil into over 35 per cent 400° F. endpoint gasoline and producing cracked residue passing all market specifications for periods of time extending over 15 continuous days. When cracking 18 gravity topped crude by the coking method, yields of over 54 per cent motor fuel are produced commercially. When converting 25 A.P.I. gravity gas oil, over 56 per cent of gasoline is produced, with a marketable cracked fuel oil, during continuous cracking periods of more than 36 days. The knock rating of the cracked motor fuel is 50 per cent benzol equivalent or higher.

Residual Oil Method

The residual oil method of converting gas oil or fuel oil, using the flashing system, gives high yields of motor fuel, furnace or Diesel oil with a minimum production of gas and coke, while the cracked residue has a higher thermal value per barrel than the cracking stock. This mode of operation, when cracking heavy gas oil, produces commercially over 56 per cent of motor fuel during periods of 36 continuous days or more. When cracking Los Angeles Basin topped crude oil, the yield of motor fuel is over 35 per cent with operating periods of 15 continuous days or more.

The following data covers the commercial cracking of gas oil by the flashing method:

The commercial cracking of over 81,000 bbls. of California gas oil in a continuous manner covering 36 days, in each cracking unit, produced as an average over 56 per cent cracked gasoline of approximately 55 per cent benzol equivalent. The cracked residue passed commercial specifications.

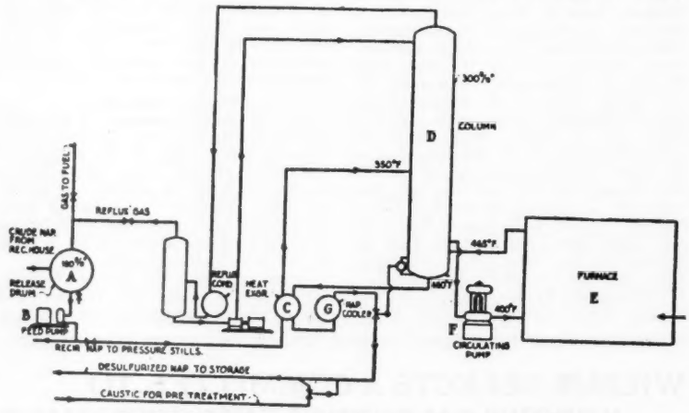
The following is an analysis of the gas oil used as charging stock:

A.P.I. gravity 26.5
Sulphur, per cent 0.95
9 per cent over at 500° F.
41 per cent over at 600° F.

The accompanying table gives the details of throughputs, yields of products and operating conditions of two units of cracking process.

The cracking of 28,500 bbls. of Los Angeles Basin topped crude per unit in a continuous manner covering 15 days, produced 36 per cent of cracked gasoline of approximately 50 per cent benzol equivalent. The cracked residue passed market specifications.

The cracking unit referred to is converting 1,900 bbls. of topped crude oil per day. There are other cracking units in commercial operation having a daily capacity of from 1,000 to over 35,000 bbls. of topped crude.



Desulphurizing plant for flow diagram of pressure gasoline.

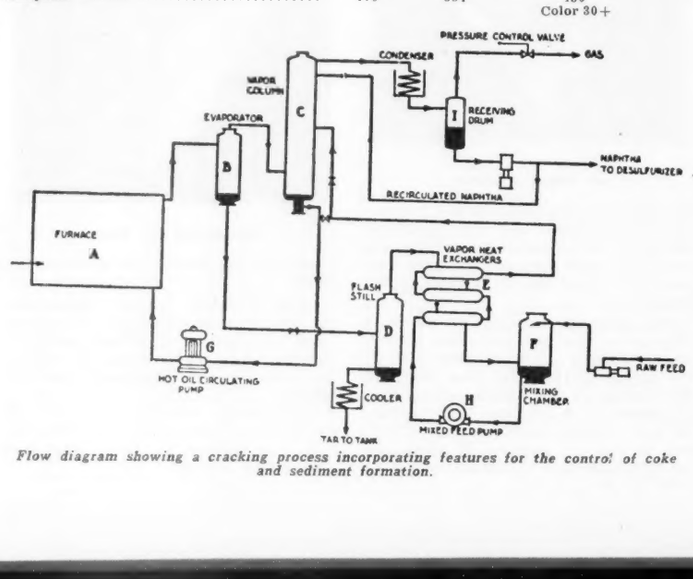
CRACKING CALIFORNIA GAS OIL

Hours on stream	868	872
Days on stream	36.1	36.3
Gas oil (total bbls.)	81,592	81,968
Gas oil (bbls. per day on stream)	2,259	2,257
Pressure distillate (total bbls.)	48,556	48,771
A.P.I. gravity	53.0	54.0
Per cent of gas oil	59.51	59.5
Cracked residue (total bbls.)	26,925	27,049
Per cent of gas oil	33.0	33.0
A.P.I. gravity	8.1	8.0
Viscosity Saybolt at 130° F. Secs	198	200
B.S. (Benzol test)	0.4	0.6
Coke, gas, loss, per cent	7.5	7.5
Coke (lbs. per bbl. of charge)	0.1	0.1
Gas (cu. ft. total)	31,821,000	31,967,000
Gasoline, per cent of gas oil	56.6	56.6
A.P.I. gravity	56.5	56.5
Temperatures ° F.		
Furnace above tubes	1,260	1,410
Furnace below tubes	975	1,050
Transfer line	887	876
Vapors to condenser	505	505
Reflux	782	777
Pressures (lbs. per sq. in.)	275	275

Distillation Analyses

The following are distillation analyses of the cracked distillate, chemically treated distillate, finished gasoline and pressure distillate bottoms:

	Pressure distillate untreated	Pressure distillate treated	Gasoline	Pressure distillate bottoms
Sulphur, per cent	0.51	0.37	0.15	1.3
A.P.I. gravity	54.6	52.8	56.5	23.8
I.B.P.	84° F.	86° F.	85° F.	440° F.
20 per cent	175	193	180	85% over at 600° F.
50 per cent	285	306	282	
90 per cent	432	462	405	
Endpoint	470	554	430	
			Color 30+	



Flow diagram showing a cracking process incorporating features for the control of coke and sediment formation.

Analysis of Topped Crude

The following is an anlysis of the topped crude used as cracking stock:

A.P.I. gravity	19.0
Flash	200
Viscosity furol at 122° F.	60
B.S.W. (300-31), per cent	0.2
Sulphur, per cent	1.3

CRACKING OF LOS ANGELES BASIN TOPPED CRUDE OIL

Hours on stream	360
Days on stream	15
Topped crude (total bbls.)	28,500
Topped crude (bbls. per day)	1,900
Gasoline (total bbls.)	10,260
Per cent of topped crude	36.0
400° F. endpoint, A.P.I. gravity	56.4
Cracked residue (total bbls.)	16,245
A.P.I. gravity	9.6
Per cent of topped crude	57.0
Viscosity Saybolt furol at 122° F.	150 Sec.
B.S. (Benzol test), per cent	1.3
Coke, Gas, loss per cent	7.0
Coke (lbs. per bbl.)	0.2
Gas (cu. ft. total)	8,550,000
Temperatures ° F.	
Furnace above tubes	1,630
Furnace below tubes	1,095
Transfer line	930
Operating pressure (lbs. per sq. in.)	170

The cracked residue contains more heat units per barrel than straightrun fuel due to the fact that there are more pounds of oil in each barrel, hence, cracked residue is a premium fuel oil.

Although straightrun fuel oil has more B.t.u.'s per pound that lower gravity cracked residue, yet there are more actual pounds of oil per barrel in the cracked residue. The cracked product more than offsets the difference due to its greater weight per barrel. A cracked residue of 9.6 gravity has an 18,300 B.t.u. content per pound, whereas a Bunker C straightrun California fuel oil of 14.3 gravity will show about 18,500 B.t.u. per pound. A cracked residue passing all market specifications except the gravity one should command a premium price, due to its B.t.u. content per barrel. Some Mid-Continent refiners using the cracking process are receiving 5 cents a barrel premium for cracked residue. The oil industry may well develop its fuel oil market on the basis of the heating value of a barrel of fuel oil and not on a barrel basis as at present.

Cracked Distillate

Another method of operating the cracking process produces gasoline, furnace oil, coke and gas. Maximum yields of gasoline are produced by this method and, under certain conditions, it is the most

(Continued on Page 206)

Equipment Show Stirs Wide Interest

Los Angeles Oil Exposition to Present Newest Appliances in Exploration, Development, Transportation and Refining

By L. P. Stockman

Los Angeles will be a center of interest in the petroleum industry during the week of March 16 to 23, when the first annual Pacific Coast Oil Equipment and Engineering Exposition will be held in that city's largest auditorium. Equipment of interest to oil men in all branches of the industry will be shown. It will include the latest appliances used in exploration, development, transportation and refining. Improved forms of

—Boye Photo.

E. G. Lenzner

Managing Director Oil Equipment and Engineering Exposition, Los Angeles.

standardized machinery will share interest with devices that are still in the experimental stage and have yet to be submitted to the test of actual field service.

Probably the chief attractions will be the displays of drilling and producing equipment, which will include practically everything that is used in those departments. Rotary drilling bits designed to penetrate the difficult formations encountered in deep drilling will be featured by various manufacturers. Some are designed for the hardest formations, some for soft formations, others for streaky strata with extreme variations in hardness and some are general purpose bits. Fishtail, disc and roller bits are included, ranging in size from 2 to 30 inches. Some have the discs or rollers operating eccentrically, or placed at unusual angles, while others have the parts detachable. Some bits cut a larger diameter hole when they are worn than when they are new, and others cut a core that is later destroyed.

Bits Shown in Operation

Different means will be adopted by manufacturers to show the efficiency of their products. In some instances, the bits will be mounted on holders and rotated as in drilling to show the movement under service conditions. In other cases the bit will be shown drilling cement or plaster blocks, or these blocks will be shown after the holes have been drilled in them. Cutters that have withstood severe service under exceptional conditions in the field will be shown.

Hard surfacing of drilling bits will be demonstrated by the manufacturers of bits, by the welding companies, and by the makers of various abrasion-resisting materials.

One of the interesting exhibits will be demonstration of oxy-acetylene and electric-arc welding applications of hard-facing and diamond substitutes.

Demonstrations of well surveying instruments will be given by several companies engaged in that work, and visitors will be given an opportunity to test the accuracy of the records made by the apparatus. In at least two instances, the manufacturers will place their instruments on specially designed testing frames and will invite the visitor to turn the instrument himself and check the accuracy of the records. One exhibitor will show sections of celluloid tube, representing a well, into which the surveying instrument will be dropped. Its course can be watched by the observer, who can test how closely it indicates the variations caused by bends in the tube.

Many transparent models will be shown. One glass model will be used to demonstrate the use and practical value of casing protectors. Other models will be used to demonstrate the subsurface conditions in drilling and producing wells.

Technique of Cementing Shown

In one exhibit, illustrating the technique of cementing a string of casing in an open oil well, the open face of the model will represent a cross section of the well, showing in detail the formations that have been penetrated and the body in which the casing is to be cemented. All of the details are correct and follow actual procedure closely in duplicating actual field methods of cementing.

Another model, similar in construction to the one just mentioned, will be in continuous operation. It will show the action of a well that is being produced by the gas lift. The outstanding

Ward B. Blodget

Assistant Manager Chanslor-Canfield Midway Oil Co.; Director Oil Equipment and Engineering Exposition, Los Angeles.

feature of this model is the representation it gives of subsurface action, which can be varied to represent different producing problems.

The action of a bottom bean in an oil well is to be represented in a model that will show clearly the actions and reactions that take place under varying conditions.

Methods of securing production from oil wells that have a very small output will be shown in another exhibit, which shows the operations of the intermittent system of injecting gas into a well and obtaining production by displacement.

Among a large number of working models will be one showing the operation of fishing tools of a new design, and an operating model of an automatic recording weight indicator.

The scientific section will include many pieces of equipment used in exploratory work. In addition to the seismograph, the magnetometer, and the manually operated torsion balance, the exhibits probably will include a new automatic recording balance that is on its way from the factory in Austria.

Cameras used in aerial photography will be shown, together with the individual photographs and the final mosaic or composite photograph that gives an accurate picture of the topography of a field. The exhibit will present the latest developments in aerial cameras, which take photographs from a height of over 10,000 feet. These photographs, seen under the enlarging stereoscope, give positive evidence of fault lines and other structural features. Visitors will have an opportunity to see these aerial photographs under the stereoscope and thus gain a new conception of the topography of California oil fields.

An exhibit that will attract the attention of those interested in the origin of oil consists of photomicrographs of diatoms, which have been suggested as the source of California oil. Thousands of different types of these organisms exist

A. H. Bell

General Superintendent, Continental Oil Co. of California; Director Oil Equipment and Engineering Exposition, Los Angeles.

and only by microscopic classification can they be identified.

Foraminifera, or "bugs," will be shown by photomicrographs. These fossils have been divided into 500 major groups, subdivided into many different species, of which over 12,000 have been identified.

Photomicrographs of soft steel and hard-facing metals will also be shown, including one in which the fusion line of a hard-facing metal to a tool steel is shown.

The United States Bureau of Mines

Neil Norris

Manager of Production, Macmillan Petroleum Co.; Director Oil Equipment and Engineering Exposition, Los Angeles.

will contribute an unusually interesting exhibit.

Los Angeles has many advantages as an oil-exposition city. It is surrounded by manufacturing plants that produce practically all forms of oil-industry equipment and that have originated many of the most successful devices now in

L. E. Lockhart

President, Rio Grande Oil Co.; Director Oil Equipment and Engineering Exposition, Los Angeles.

common use throughout the oil fields of the world.

Near Big Oil Fields

It is within easy distance of highly productive oil fields. It has ample hotel accommodation, fine paved streets and boulevards connecting mountain and seashore recreation parks, and it has great climatic attractions. It is visited by a large percentage of the foreign buyers who come to this country to place orders for companies operating in foreign fields, and it has an important export trade in petroleum products and oil-industry equipment. In combination, it offers the oil man an unusual opportunity to investigate recent developments and improvements in equipment and procedure.

Since Tulsa pioneered in 1923, the educational value of a combination of trade exhibits and technical sessions has been increasingly evident to oil men. They recognize that such a combination performs a useful service.

Manufacturers, oil company executives, engineers, field men, inventors and foreign buyers look upon the exposition and conference as an international marketing place where the problems of every branch of the industry in both American and foreign fields can be discussed by experts and where each man can learn how far his own problems have been encountered and solved by others.

Much of the appreciation of the combined exposition and conference has come as a result of the increasing importance of engineering in oil industry operations, and the consequent rise of the engineer to an important position in its business and executive departments.

EXPOSITION PROGRAM

Sunday, March 16

Doors open at noon.

Monday, March 17

Morning session, 10 a.m., assembly room, Shrine Auditorium.

Tuesday, March 18

Afternoon session, 2 p.m., assembly room, Shrine Auditorium. Sponsored by American Welding Society. W. A. F. Millinger, Shell Oil Co., chairman; G. H. Montfort, Shell Oil Co., secretary.

"Recent Developments in Oxy-acetylene

(Continued on Page 165)

Reeser Urges California to Co-operate

Tells State Oil & Gas Association Conservation Is Worth While From Every Point of View. Presents Arousing Figures

By E. B. Reeser
President, American Petroleum Institute*

You have heard so much about conservation, curtailment, gas laws, et cetera, that I hesitate to burden you further with statistics and warnings. The condition of the patient, however, justifies another blood transfusion. Has the conservation movement been successful or worth the time we have given to it? Shall we follow the lines of least resistance and let the old law of "supply and demand" govern the industry? A few of the more fortunate ones would like the old methods to prevail. The question deserves the most careful attention and your answer need not be based on the opinion of any one. Experience will guide us as certainly as did the Star of Bethlehem guide the Wise Men of the East.

The petroleum industry has expanded at a rapid rate from the very beginning. Ten years after "Uncle Billy" Smith excited the village of Titusville by telling of his discovery at Colonel Drake's well, the production of crude oil reached 4,215,000 bbls. and was sold for $23,700,000. Five years later, the production reached 11,000,000 bbls. with a sales value of only $12,648,000. The unrestricted policy continued and in 1882 the production reached 30,000,000 bbls. and was sold for almost exactly the same amount received for 4,215,000 bbls. in 1869.

More Costly Now

Overproduction is even more costly now than it was years ago. In 1928 the total production in the United States was 900,000,000 bbls. and the producers realized less than they obtained for 440,000,000 bbls. in 1920.

The year just closed, was filled with hope and disappointments. Nineteen twenty-eight showed the greatest initial production of all times—8,366,000 bbls. —as a result of which, the first three months of 1929 added an average of 203,000 bbls. per day to storage. The nearest approach to this excess of production was in the same three months of 1927, during which period Mid-Continent crude prices declined 50 cents per barrel.

On February 11, 1929, the first nationwide movement toward conservation was started. At a meeting of the directors of the American Petroleum Institute held in St. Louis a resolution was adopted, under which a committee on world production and consumption was appointed.

Never before was any industry so determined to correct waste of every kind. The general and regional committees were composed of real leaders in the various states. They represented 72½ per cent of all the production of the United States. Time was given liberally in the discussion and preparation of the committee's report which was adopted at Houston on March 15. The essence of the report was that beginning April 1 the average daily production of the four regions should not exceed the average of 1928. The report was unanimously adopted by the Institute directors at a meeting in New York on March 27.

The industry was filled with enthusiasm—at last a remedy had been found on which a stabilized industry could be built—but alas, our hope was soon to be dashed to pieces. Everything done by the committee was in open session, with a representative of the Federal Oil Conservation Board present. It was believed that the report was in accord with the ideas expressed on several occasions by the conservation board. On April 3, at a hearing in Washington, Secretary Wilbur released the famous opinion of Attorney General Mitchell and thus ended the most constructive effort ever undertaken by the industry. Much time elapsed before the industry realized that localized efforts must be undertaken in an attempt to prevent a chaotic condition.

New Hope Appears

About this time, a new hope appeared —California passed a bill to prevent waste of gas. By this measure it was expected that oil production would be reduced to a proper volume. We need not review the delays and disappointments in connection with this subject. Like the warriors of olden times, apparent defeat seemed to spur the leaders to greater efforts. Too much praise cannot be given the California producers for the efforts they have made. Delays and disappointments halted the movement, but the determination to correct the situation would not stop and thus we approached the end of the year with production and consumption approximately in balance over the last two months.

Nineteen twenty-nine was the first 1,000,000,000-bbl. year. The potential production was far in excess of anything dreamed of and yet crude prices generally averaged higher than at any time in several years. Figures indicate a saving in 1929 to producers of the United States of hundreds of millions of dollars as a direct result of the co-operative movements to curtail production. Shall we continue the conservation movement?

It is unfortunate that so many of those who received the greatest benefit are the ones who need to be coaxed and begged. It is so easy to criticize and point a finger at the other fellow. Less than a year has passed since the beginning of the first general movement to correct our troubles. I have touched briefly on a few of the difficulties encountered. I am optimistic enough to believe that we are on the eve of better times.

May I take a little time to refer to striking figures in connection with 1929 operations? Domestic production reached the staggering total of 1,005,598,000 bbls., a daily average of 2,755,100 bbls. This was a daily average of 292,000 bbls. greater than in 1928. It is interesting to note that, if the program adopted at Houston had been carried out, a withdrawal from stocks of about 121,500 bbls. per day would have resulted.

All the oil produced in the United States from the discovery of the Drake well in 1859 to the end of 1900 did not quite equal the domestic production of 1929. Can you imagine anything more impressive or indicative of the growth of the industry than that statement?

End Wild Scramble

Admitting the unsatisfactory condition of the industry at this time, I am optimistic enough to believe that we are nearing the day when we will be working in the interest of our stockholders instead of the wild scramble to dispose of our products at the present unremunerative prices.

It is quite natural that an industry as large as ours should develop different ideas with respect to various phases of the business. We have, for instance, well-informed men who go on record as being confident that the United States possesses reserves of petroleum to last 700 years. Such a statement is, of course, subject to many interpretations. In the face of a potential production of perhaps 1,000,000 or more barrels per day in excess of the volume now being produced, it may be dangerous to attempt to convince anyone that the worst is over.

Does the "dry hole" record mean anything more than that the increasing num-

(Continued on Page 207)

*Before annual meeting California Oil and Gas Association, Los Angeles, Calif., March 6.

Urge Co-operation in Annual Address

President Jones Concluding Two Years as Head of Western Refiners Discusses Many Problems Confronting Operators

By Roy B. Jones
President Western Petroleum Refiners Assn.*

During the past two years it has been both my honor and my pleasure to act as president of our association. The duties of such an office include the presentation of an annual statement regarding our condition and activities. Prominent among the president's privileges may be mentioned an annual opportunity to express his thoughts with a reasonable hope that he may receive at least the tolerant interest of his friends.

The first Mid-Continent refinery was built in 1892. It was in Kansas. Six years later the first plant was built in Inland Texas. Then after a further lapse of seven years Oklahoma joined the refining states. Three years later Missouri joined the group and then another three years passed before the first Northern Louisiana plant was operated. At that time there were no refineries in Arkansas. The following year, 1912, the Western Petroleum Refiners Association was organized.

While constantly changing conditions had been experienced by the industry, it seems improbable that the few refiners attending our first meeting fully appreciated the eventual importance of the Mid-Continent refining industry or the potential advantages of the association they had created. The motor vehicles that were to revolutionize refining were then comparatively few. All the cars of the entire country in 1912 were about equal to those in service in Iowa in 1929. Since our association was organized gasoline production has increased eighteen fold. Last year Inland Texas alone produced more gasoline than all refineries of the country in 1912. Two-thirds of the output of a single month at United States refineries of the present time would have supplied the annual gasoline demand of the nation when our first meeting was called to order as an acknowledgement of common problems and faith in co-operation as an aid in their solution.

Among these rapid adjustments to meet new conditions our association has more than maintained its relative importance. With respect to gasoline, generally considered the most essential of the products, the plants of member companies ship approximately 17 per cent of the total volume leaving all refineries of the country. Our association is an important factor in a great industry, and, in my opinion, its growth and maintenance during times of both adversity and welfare are excellent testimonials to its utility.

During recent years the main activities of the association have concerned themselves with what might be termed the economic phases of refining. This has required a search for facts, a dissemination of conclusions, and a constant defense of expressed opinions. Sometimes a search for sufficient facts has required knowledge of the intimate affairs of member companies. Regardless of desires to co-operate, inquiries regarding our personal business arouse some feeling of antagonism. Conclusions that run counter to our preconceived ideas are the subject of at least reluctant regard. Argument is always apt to lead to bitterness and discord. It will therefore be seen that the efforts of the association has been directed along lines that might reasonably create a spirit of resentment among the membership. The fact that we have gained in strength in the face of such conditions speaks well for the spirit of our members. It also demonstrates that, regardless of differences of opinion, the efforts of the association command respect.

I will not attempt to review in detail the activities of the association during my terms of office. It has passed through busy and trying years, its best thoughts and best efforts have been directed toward the improvement of your affairs, and, just like our individual companies, it has experienced both success and disappointment.

Work of Association

The year 1929 was not as satisfactory as its predecessor from point of profit. Conditions, however, were probably better than in 1927. It is my opinion that unwelcome fluctuations in whatever profit may be derived from refinery operations are far more apt to result from inequalities in our application of known facts to our individual plans, and conditions imposed by the actions of competing plants, than to either the excellence or fallacy of the association. I am satisfied there have been many times when without the association conditions would have been much worse; many times when without the association we would have lacked the facilities necessary for even an attempt to improve affairs; but never a time when we could have profitably dispensed with the services our association attempts to render.

The last few annual meetings of our association, aside from the election of officers and directors, have been devoted principally to informal discussions of problems of common interest and importance to executives of member companies. This year the same procedure will be the order of the day. Each year new problems attract attention, invariably, however, old problems present themselves anew. Disguise may be altered as the fashions change, but beneath the paint we usually recognize the features of problems such as overproduction, price, expansion, competition, and quality, all time-worn and ancient as industry itself. There are so many things we can profit-

(Continued on Page 88)

*Annual meeting, Western Petroleum Refiners Association, Shreveport, La., March 10, 11 and 12.

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FOLLOWING DATE OF ORDER

Order placed January 16th . . . Plant in operation February 4th

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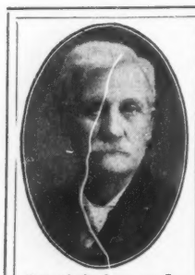

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THE GOVERNMENT'S WARNING

When The Oil and Gas Journal announced two weeks ago that the gasoline situation was threatening the prospects of the entire industry for the remainder of the year, unless heroic remedies were applied at once, it was not thought the Federal Government would take a hand in the matter.

But conditions were becoming so plain that even those outside the industry could not fail to see them. Indeed, it seemed that bystanders were better able to size up the general situation than those inside who were looking only at their immediate surroundings.

Overproduction of staple commodities and resulting depression of industry has become a familiar problem at Washington, in the cases of the farmer, the cotton grower, and other basic industries. The similar trend in the oil industry has been forcing itself upon the attention of the government oil board for several years.

The unchecked and continuing overproduction of gasoline called for drastic action. Plainly it was time to do something since the industry seemed incapable of dealing with it.

The Federal Oil Conservation Board has suggested a definite plan for curtailing refinery operations so that the situation brought about by the excessive accumulation of refined products, particularly gasoline, can be remedied and that branch of the oil business stabilized for the balance of the year.

While the plan, as first suggested, for a shut-down on Sundays is not practical for the majority of refiners, the alternative to reduce runs during seven days to what they would be during six days, or approximately 14 per cent, is within the range of possibility.

A large number of refiners, including several of the major operators, have been sufficiently awake to the danger to balance their operations with demand and this should make them all the more eager now to do even more than their share to assure the success of the main movement.

Those who had already made a curtailment of their operations due to existing conditions have the right to consider this action in determining the amount of their own curtailment but this privilege should not be abused.

No individual refiner should attempt to evade his responsibility in this situation by setting an inflated normal operation as the basis for his calculations in curtailment.

This is an emergency situation and we will fall short of the objective unless there is 100 per cent co-operation of the great bulk of the refining industry.

No one will disagree with the statement of Secretary Wilbur that there is and has been for some time a large excess production of motor fuel. The majority of the refiners can look up their ledger sheets to determine just when this condition started. A glance at current statistics leaves no doubt regarding this situation. The latest report of the United States Bureau of Mines released last week shows that gasoline stocks at the end of January totaled 49,676,000 barrels, a record increase of over 6,500,000 barrels during the month.

This relative situation did not improve during February as indicated in the report of the American Petroleum Institute which showed gasoline stocks of 52,190,000 barrels on March 1.

These stocks have been excessive for several months and if they continue to increase at the same rate from now until May 1 when the main gasoline consuming season is under way the inventories will prove excessive and the refining branch will have the sorry privilege of reducing these surplus stocks at distress prices throughout the summer and fall months.

President Roy B. Jones, of the Western Petroleum Refiners Association, in his annual message delivered at Shreveport this week summarized the situation when he pointed out that 12½ per cent increase in demand during 1929 had been met by a 15 per cent increase in supply, resulting in a 10,000,000-barrel addition to gasoline stocks, or 30 per cent increase for the 12 months.

He makes a very apt comment that this 2½ per cent difference between supply and demand seems small to have been the cause of the present condition of the refining industry, but it would have been equally small had it been applied to reduction of refinery runs throughout the year.

However this is water over the dam and no 2½ per cent situation now exists. It is imperative within the next few weeks for the industry to bring about a better stabilized position in the refining branch.

Gasoline storage on May 1 should be no greater than it was on March 1 and it would be better for the oil business if it was substantially less.

The suggested curtailment of Secretary Wilbur will bring about the desired condition if continued for the next 60 days.

The difference between supply and demand in January was approximately the same as the curtailment now suggested by the Secretary.

This program, adopted to the full by the refining industry, will stop unnecessary crude runs to stills in the country as a whole immediately, and within a few weeks when the gasoline demand improves will bring about conditions where withdrawals can be made from these excessive inventories.

It is not necessary to determine at this time just how long this program should be continued. This is a minor detail. The big thing is to get it into effect immediately and it will be apparent to everyone when conditions justify its cessation.

The recent reduction in crude oil prices was concrete evidence that the first step in correcting general conditions in the oil business must be made in the refining market.

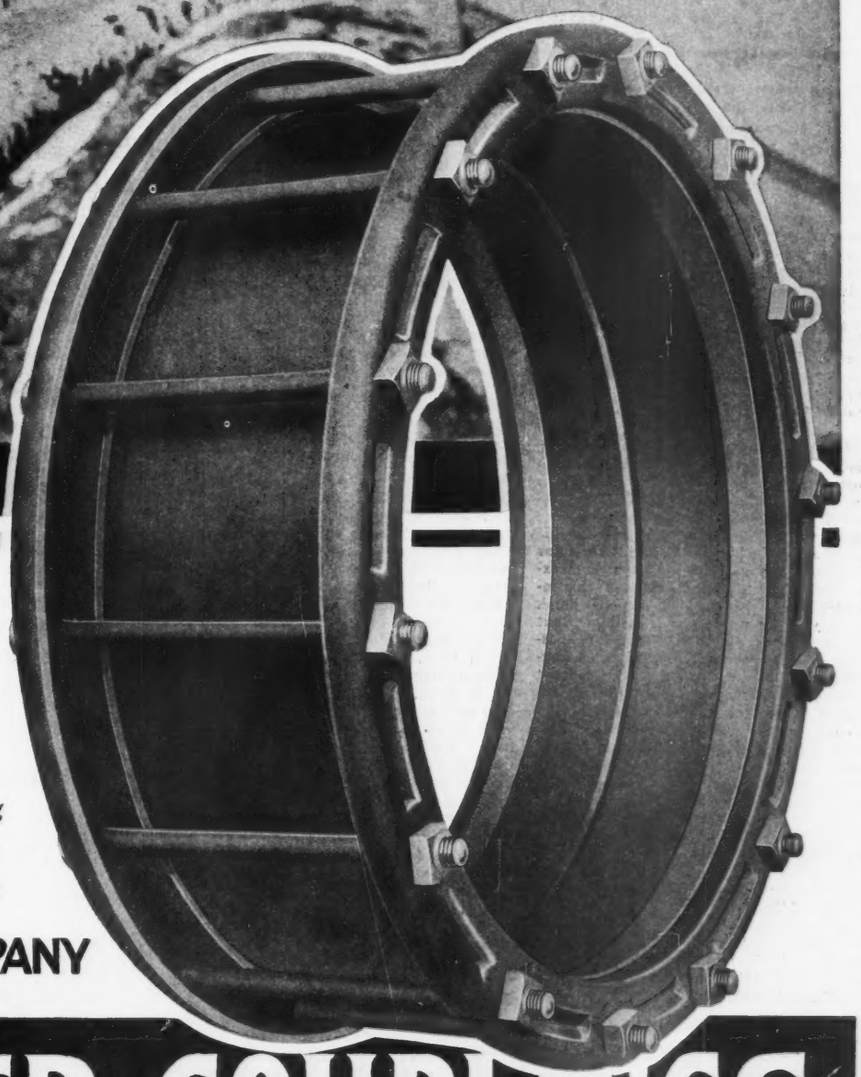
Running crude oil to stills and storing the products in tanks already overloaded does not get anywhere toward correcting fundamental conditions.

The oil producers have their situation under better control now than for some time. The government figures for January show a small withdrawal from crude oil storage for the entire country and substantial withdrawals east of California. This branch of the industry has as much at stake as the refiners and is willing to make whatever further curtailment may be necessary to aid the refiner to get his house in order.

Secretary Wilbur's original notice referred to three states only, Oklahoma, Texas and California, but it is understood this has since been amended, as it is clear that any such program of curtailment to be effective must include all refiners whether operating on do-

(Continued on Page 56)

A Cold Fact!



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DRESSER COUPLINGS DOMINATE!

Losses in Natural Gasoline Shipments

With Proper Equipment in Handling and Transportation Facilities Valuable Constituents Can Be Saved. Costing $7,000,000 Annually

By Emby Kaye
Skelly Oil Co.*

A proper appreciation of the subject of this paper requires our acceptance of a fundamental proposition. It must be assumed that we all recognize the fact that natural gasoline is a highly volatile liquid manufactured at higher than atmospheric pressures, and that, until it is absorbed by naphtha or high boiling point gasoline whose volatility it is designed to increase, it must be handled under a confining pressure if loss and waste are to be avoided. The proper handling of this material by the gasoline manufacturer and by the refiner is at once an important factor on the books of both. The subject has been exhaustively studied by the gasoline manufacturer for this reason, and it is entirely possible that this same reason motivated your program committee when it docketed this paper for discussion.

The improper handling of natural gasoline is costing the manufacturer in excess of $7,000,000 annually. It is costing the refinery considerable, though I have never undertaken the task of determining just to what extent. It may reasonably be assumed, therefore, that an inquiry looking to a diminution of this preventable waste would command the interest of both gasoline manufacturer and refiner. I shall confine myself here to pointing out the sources of the loss—I shall endeavor to establish here the nature and value of what constitutes the loss; and, with your permission I shall suggest what is being done, and what you can do to effect its elimination.

Early Day Waste

In the early days of our industry the casinghead gasoline manufacturer was a sort of scavenger in the oil business. I do not say this disparagingly. He relieved the producer of the casinghead gas nuisance, provided him with fuel for his lease, and paid him something for the gas from which a gasoline was somehow extracted. The technical men in the industry could be counted on one hand. No particular product was made. Plant efficiency was not a consideration—possibly because the raw material, casinghead gas, was cheap and the market price high—perhaps because the oil industry in general was wasteful. In any event, refiner and jobber-blender took what product they could get and they took it at the asking price. There were enormous handling and transportation losses, but they were just considered incidental to operations. An examination of the product of those days gives credence to this conclusion.

In a recent article, I took as an example of a product of those early days an unstabilized condensate as is now to be found in the average gasoline plant in the Seminole Field. It is here reproduced as "I." Opposite it is the same material, "II," after rectification to "AA" specifications.

Constituent composition	I. Raw condensate Volume per cent	II. Stabilized Gasoline Volume per cent
Ethane	.72	—
Propane	13.69	.51
Iso-Butane	4.74	4.42
N-Butane	23.71	24.06
Iso-Pentane	10.43	13.18
N-Pentane	21.19	18.19
Hexane plus	25.07	39.64

Reducing Vapor Tension

Little wonder, then, that, with this excess of propane and in some cases butane, the manufacturer resorted to "weathering" his product at the plant in order to reduce its "vapor tension" to within the limits prescribed by the Bureau of Explosives before it could be transported in tank cars. After this weathering at the plant, the gasoline was often weathered after loading in tank cars because plant weathering had not been accomplished with sufficient uniformity. Again, the method of determining vapor tension—a method, as I understand it, abandoned or to be abandoned this month—permitted of considerable error. When the product was loaded in open cars, of course, additional evaporation took place. Little or no thought was given to learning the nature of these losses encountered in loading because the vapors were considered mild and their elimination tended to reduce the vapor tension of the product.

In these same days to which I am referring, the refiner received a casinghead gasoline that was uniformly "wild" in spite of previous weathering, for such weathering did not release all of the lighter hydro-carbons. To gauge and sample the material—indeed to open the bottom outlet of the car—it was necessary to remove the dome cover. Internal pressure made it unsafe to remove this cover, wherefore safety valves were raised, a spike or wedge inserted to stay the tension of the spring, and vapors released. There was no particular time limit for this weathering, nor was there necessarily any time of day or night when it was accomplished. Some refiners did it by day, others by night. I have seen cars weathered for hours after the pressure was removed. I have seen cars open and weathering hours after they had been gauged. I have seen some cars "weathering" before they were spotted for unloading.

Loss As "Outage"

Some refiners "weathered" simply to release pressure; others to be sure that

(Continued on Page 167)

*General superintendent of national gasoline department. Paper presented annual meeting, Western Petroleum Refiners Association, Shreveport, La., March 10-12.

Depreciation of Refinery Equipment

New Factors of Expense Constantly Entering Cost of Manufacturing and Further Reduce Plant Margins

By H. W. Camp and L. D. Mann
Empire Oil & Refining Co.*

This subject is very likely a relatively new one for most refinery operators. However, it is one that is brought forcibly to our attention by narrowing margins of profit and the radical changes in refinery equipment during the past 10 years. Formerly, it was the policy to establish prices that met market conditions but now it is the manufacturing department who must furnish accurate cost prices if proper earnings are to be maintained on our investments.

Most of you can readily recall operating conditions in the period between 1915 and 1920 when gasoline prices were in the neighborhood of 20 cents per gallon f.o.b. refinery and fuel oil prices of the winter of 1919-1920 when we sold every available barrel for $2.50 to $3.50. Even though the crude cost was relatively high, these prices permitted high margins of profit and the operator did not think much of manufacturing costs. Leaking pumps were packed every now and then while treating costs were a necessary evil and no one worried very much if it took three buckets of sulphur instead of two. Fuel and power expense was an item of little or no consequence; fuel oil was produced at the plant and did not require a cash outlay, so why worry about burning an extra 50 bbls.

But the "Good Old Days," to use refinery parlance, are gone forever and we have all gone through a period of close shaving; cutting corners and reducing expenses, all in an effort to stay in the business and keep our margins "black." Even with the closest economies we are sometimes in the "red" and have a long hard fight to keep operating. Keener competition and the much discussed overproduction have helped to bring about this change.

Now, every refinery has a very complicated cost system; we know where every lost barrel goes, to evaporation, to treating or filtering. We know what treating costs are to a tenth of a cent per barrel; we pack our pumps every time a small leak occurs, special men are assigned to keeping steam leaks to a minimum and the fuel expense is scrutinized to obtain the benefit of the lost B.t.u. What is the purpose of all these figures? What good do they accomplish? Only one thing, they tell us what every individual gallon of refined oil costs, whether it be gasoline, some special naphtha or lubricating oil and we can go to our sales managers and point out forcibly, such items as selling naphtha for an eighth of a cent below cost or go to the purchasing agent and inform him that caustic soda or litharge costs are too high. Even though the cost systems appear to be a burden and a nuisance, practically every operator needs them and cannot do without them, while 10 years ago such figures were considered as worthless and usually never used.

But cost figures are not sufficient. Conditions have grown still worse for the refiner and any operator who uses only his manufacturing expense as a basis of costs has already found or will soon find he has an obsolete or worn out plant with no reserve built up for replacements or additions. Some of you are familiar with old plants which have operated 20 to 30 years. They still have the old familiar receiving house, or the same loading rack or even the same old batch stills hooked up as a continuous battery with some new fractionating columns and maybe a new bottom on two of the stills. But what about the pressure stills that were built 5 years ago; all new chambers were installed recently or the condenser coils had to be renewed, or the piping replaced and perhaps 30 or 40 new tubes installed in the pipe still.

Present Conditions Different

What is the difference between those old times and present times? The real old plants were operating on sweet crudes such as Pennsylvania, they were built small and ran a certain amount of crude; the batch operations limited them. Now the same number of stills have been hooked up to run continuously and handle twice as much oil and they do it more efficiently. Who does not remember his own plant running 1,000, 2,000 or 3,000 bbls. daily, and now you handle twice that much. You added a couple of towers and a heat exchanger and your plant capacity doubled miraculously, and

(Continued on Page 168)

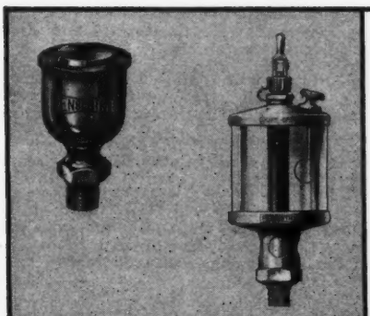
*Paper presented before manufacturing committee of the Western Petroleum Refiners Association in Shreveport, La., March 10, 11 and 12.

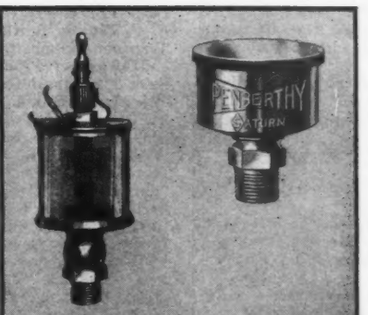
DEPRECIATION RATES ON EQUIPMENT

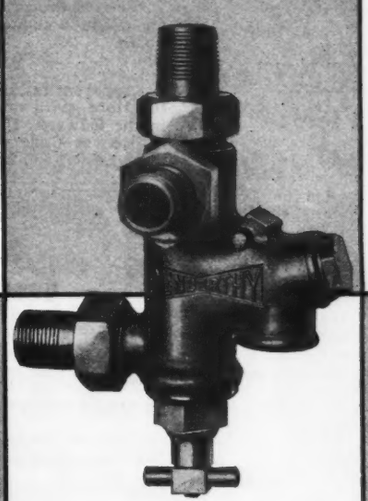
H. W. Camp and L. D. Mann have prepared a summary of depreciation rates on refinery equipment applicable in the Mid-Continent refineries. This tabulation represents the composite of the experiences of many refinery operators in the Mid-Continent plants and is suggested as representative for this group.

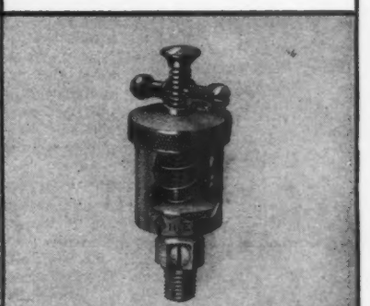
Equipment——	Rate (%)
Agitators	6¼–10
Automobiles	25–33⅓
Boilers	6¼–10
Buildings and structures	3–5–7½
Condenser boxes	5–10
Condensing equipment and cooling coils	6¼–15–25
Crude stills and towers	6¼–7–10–15
Cracking stills (overall)	10–12½–20–25
Cracking still piping	25–33⅓–50
Cracking still chambers	12½–20–25–33⅓
Cracking still condenser coils	12½–20–25–33⅓
Furniture and fixtures	7½–10
Loading racks	6¼–10
Laboratory equipment	25
Pumps and compressors	6¼–15
Storage tanks	3–5
Small tanks	5–10
Tank cars	4–5
Tank car repair shop and equipment	10
Tools	15–33⅓–50
Oil lines	5–6¼
Sewers and traps	7–10–33⅓
Water pump stations	7½–10

RECOMMENDED BY MANY USERS









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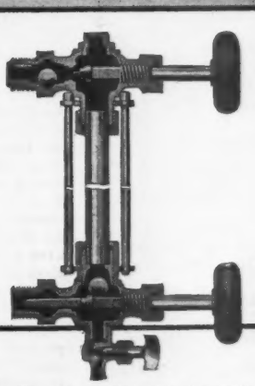

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GAS INDUSTRY HAS IMPORTANT PART IN UTILITIES ASSOCIATION MEETING

By Thomas F. Smiley

The gas industry and gas men had an important part in the twelfth annual convention of the Oklahoma Utilities Association, which opened Tuesday forenoon, March 11, in the New Hotel Tulsa, Tulsa, and is to close Thursday afternoon. The general sessions, held in the forenoon of each day, were presided over by the president, Thomas R. Weymouth, president of the Oklahoma Natural Gas Corp. Division meetings occupied the afternoons. About 1,000 persons attended the convention.

The following papers were presented before the gas division, which held its sessions in the Junior ballroom:

Tuesday afternoon. "Progress of the Natural Gas Industry," H. C. Morris, Dallas, Tex., chairman of the Natural Gas Department, American Gas Association; "Southwestern Gas Measurement Short Course," D. A. Sillers, Dallas, chairman of the general committee; motion picture, "Pipe Line Construction," E. F. Schmidt, Dallas, Lone Star Gas Co.; "Problems of Oklahoma City Field," F. F. Finney, Bartlesville, Okla., Indian Territory Illuminating Oil Co.; "Ways and Means of Promoting Domestic Gas Sales in Natural Gas Territory," F. M. Rosenkranz, Kansas City, Mo., Gas Service Co.

Wednesday afternoon. "What Is Ahead of Us?" B. J. Mullaney, Chicago, president American Gas Association; "Servicing Gas Appliances," C. E. Sherburne, Oklahoma City, Oklahoma Natural Gas Corp.; motion picture, "Oklahoma City Oil and Gas Field," provided by Henry L. Doherty & Co.; "Maintaining Service," C. C. Williams, Ponca City, Okla., Kay County Gas Co.; "Cleaning of Natural Gas," N. D. Holman, Bartlesville, Cities Service Gas Co.; "Purchasing Agents' Problems," Lee Morris, Tulsa, Oklahoma Natural Gas Corp.

Modern Sales Methods Urged

Declaring that the time is past when

(Continued on Page 210)

THE OIL MAN'S CALENDAR

March 14-15 — Chattanooga, Tenn., Triannual Meeting, Tennessee Oil Men's Association, Patten Hotel.

March 16-23—Los Angeles, Oil Equipment and Engineering Exposition, Shrine Auditorium.

March 17—Tulsa, Okla., meeting, A.P.I. Committee on Corrosion of Oil Field Equipment, Mayo Hotel.

March 17-18—Chicago, Spring Meeting, Independent Oil Men of America.

March 18—Tulsa, Okla., meeting, A.P.I. Corrosion Committee, Bureau of Standards, Pipe Line Operators and Coating Manufacturers, Mayo Hotel.

March 19 — Detroit, Regional Meeting, American Society for Testing Materials, Book-Cadillac Hotel.

March 19-21—Detroit, Convention, Michigan Oil Men's Association, Statler Hotel.

March 20-22—New Orleans, La., American Association of Petroleum Geologists, Roosevelt Hotel.

April 5-9—New York, Hoboken, N. J., and Washington, D. C., Fiftieth Anniversary Celebration, American Society of Mechanical Engineers.

April 7—Pittsburgh, Pa., Meeting and Election, Eastern District, Division of Production, American Petroleum Institute, William Penn Hotel.

April 5-13—Detroit, All American Aircraft Show.

April 7-11—Atlanta, Ga., Seventy-ninth Meeting, American Chemical Society.

April 7-12 — Chicago, Annual Meeting, American Oil Burner Association, Stevens Hotel.

April 15-17—Norman, Okla., Gas Measurement Short Course, Universysity of Oklahoma College of Engineering.

April 24-25 — Cleveland, Ohio, Semiannual Meeting, National Petroleum Association.

May 5-8—New Orleans, La., Convention, Natural Gas Department, American Gas Association, Roosevelt Hotel.

May 12-15—Atlantic City, N. J., Annual Meeting, National Fire Protection Association, Haddon Hall.

May 20-22—Tulsa, Okla., annual meeting, Natural Gasoline Association of America, Mayo Hotel.

May 21-23—Los Angeles, Calif., National Foreign Trade Conference.

June 16-25—Berlin, Germany, World Power Conference.

June 23-26 — San Francisco, Calif., Convention, American Railway Association.

June 23-27—Atlantic City, N. J., Annual Meeting, American Society for Testing Materials.

Late Fields

KANSAS

In the north extension to the Ritz Pool, in McPherson County, Shell Petroleum Corp.'s No. 1 Koehn, in Section 36-19-2w, swabbed and flowed 335 bbls. of oil the first 24 hours. The oil was coming from the chat at 2,965-72 feet.

Another test in the Voshell Pool found oil in the Simpson sand, Prairie Oil & Gas Co.'s No. 2 Stuckey, SW cor. NW NW, Section 10-21-3w, had the Simpson sand at 3,370-72 feet, and was swabbing about 45 bbls. an hour.

WEST TEXAS

FORT WORTH, Tex., Mar. 11.—Earl Hemby and others' No. 1 Brooks, located in Section 16, Block 59, P.S.L. Survey, Reeves County, encountered a small show of oil and gas at 1,820-27 feet. Drilling ahead at 1,828 feet. This test is practically surrounded by dry holes.

ROCKY MOUNTAIN AREA

DENVER, Colo., Mar. 11.—The deep test being drilled on Section 35-40-79 in the Salt Creek Field by the Midwest Refining Co. on the Mountain Producers lease has been deepened to 3,855 feet and production is increasing steadily with deeper drilling. At present depth it is flowing between 1,400 and 1,500 bbls. daily. It is 75 feet in the Tensleep which is estimated to be between 200 and 300 feet thick.

Deep test on section 34-26-88 on Mahoney Dome in Carbon County, Wyoming, being drilled by the Producers & Refiners Corp. jointly with the Midwest Refining Co., which also is in the Tensleep, has been deepened to 4,683 feet and the oil is increasing and now stands at 2,700 feet in the hole.

OKLAHOMA

The production from the Oklahoma City Pool increased on the gauge of March 11, when the field made 88,864 bbls. from 26 wells, compared to 34,474 bbls. from 20 other wells on the previous day. The class "A" wells were on production and two new wells were making their initial production on the same day.

Coline Oil Co.'s No. 4 Warren, SW cor. NW SW, Section 18-11-2w, one of the new wells, made 11,622 bbls. in 12

(Continued on Page 212)

High Spots in Field News

CALIFORNIA

California curtailment still in doubt, complicated by gasoline marketing conditions.

OKLAHOMA

Deeper cut brings State production down to 604,000 bbls., lowest since August 1, 1928. Oklahoma City reduced to 63,000 bbls.

KANSAS

Five new wells in Voshell Pool. McPherson County Pool has 16 wells with potential of 18,000 bbls. Ritz Pool extended.

NORTH LOUISIANA-ARKANSAS

Zwolle Pool has 1,000-bbl. well. Carterville and Zwolle busiest areas. Zwolle may be spotted. Arkansas quiet.

NORTH TEXAS AND PANHANDLE

Montague County test being closely watched. Flowing 70 bbls. Gray County proration encountering difficulties and new meeting to be held.

SOUTHWEST TEXAS

Second producer in Williamson County. Pettus area well, Bee County, flows 79 bbls. hourly through small choke. New shallow pool in Zapata.

ROCKY MOUNTAINS

Salt Creek test deepened to 3,855 feet, 75 feet in Tensleep which is 200 or 300 feet thick, has 1,400 to 1,500 feet of oil in hole.

Mahoney Dome, Carbon County, Tensleep test, deepened to 4,683 feet, has 2,700 feet of oil in hole.

GULF COAST

Tests on five new areas being started. Prospect in South Central Brazoria County.

Second producer on Orchard Dome, Fort Bend County, makes 2,300 bbls. on half-inch choke. Raccoon Bend area extended 4,000 feet east and slightly north.

WEST TEXAS

Apparent failure in Penn Pool, Ector County, which has 29 operations and locations, with no semblance of slackening of activity or production. Test in the Edwards Plateau region.

Reeves County test, surrounded by dry holes, has small showing of oil and gas at 1,820-27 feet.

EDITORIAL

THE GOVERNMENT'S WARNING

(Continued from Page 52)

mestic or imported crude with a corresponding reduction in imports of crude and petroleum products.

The point is being made in the East and elsewhere that besides the proposed reduction in runs the continuance of excessive shipments from California also enters into the situation. It is plain that reduction of production elsewhere might be much more than supplied by shipments from California which could very easily defeat the whole purpose of the movement.

Those 52,000,000 barrels of gasoline storage must be somewhere. It is idle to consider that this or that company may not have an excess of stocks. It is plain that the refining branch as a whole is dangerously overstocked and it will require the individual efforts of each and every operator to remedy the situation.

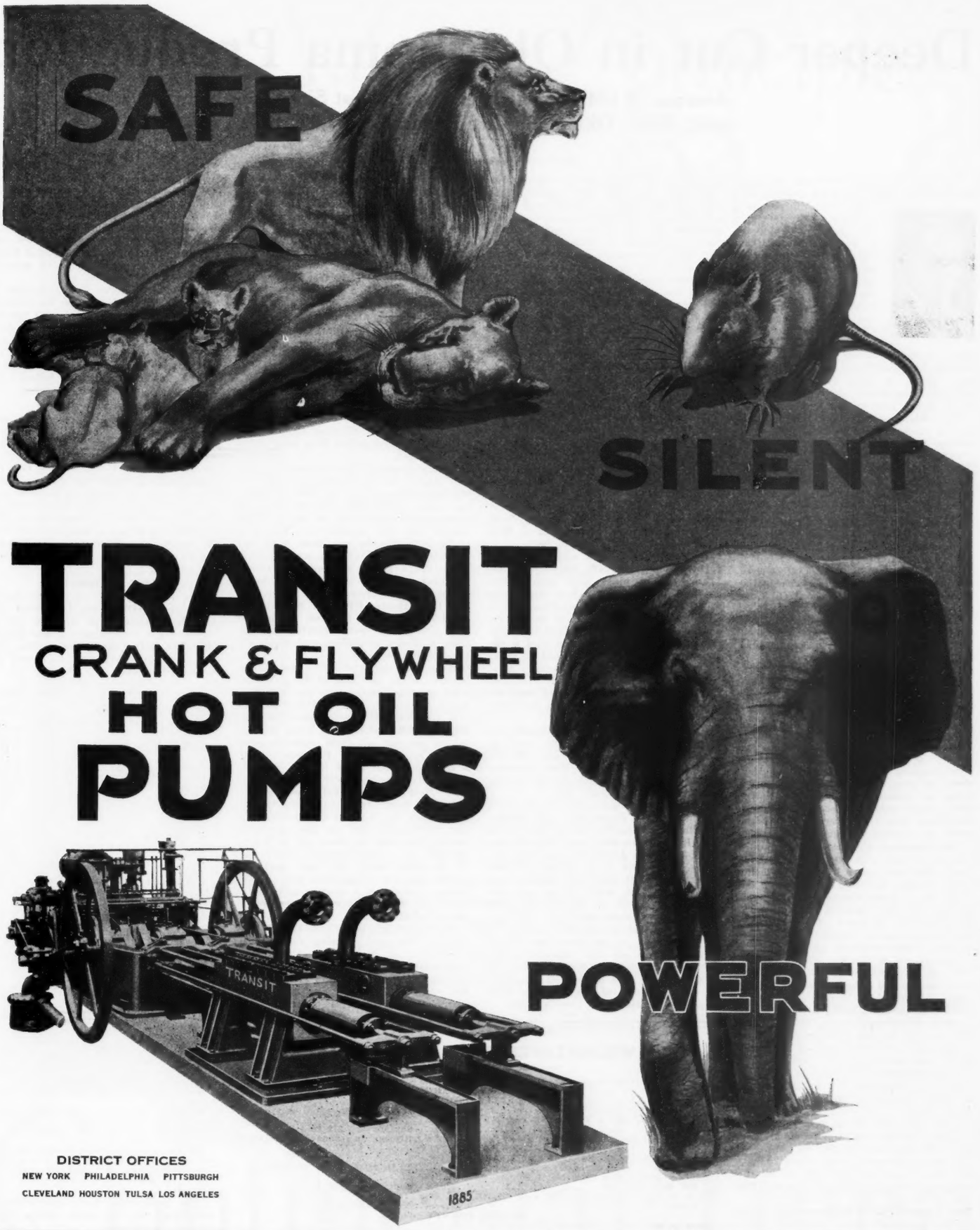
The immediate necessity is to reduce that overhanging surplus so that the industry can enter the main consuming period without distress gasoline ruining the whole season. That has happened so often that we know exactly what to expect if something is not done at once.

A.P.I. WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to stills, gasoline stocks and gas and fuel oil stocks—for the week ending March 8 follows:

	(1)	(2)	(3)	(4)
East Coast	100.0	3,315,600	8,520,000	6,353,000
Appalachian	91.0	632,200	1,794,000	671,000
Indiana, Illinois, Kentucky	98.6	2,078,200	7,861,000	2,895,000
Oklahoma, Kansas, Missouri	98.1	1,935,700	4,707,000	3,338,000
Texas	90.8	4,114,100	8,377,000	11,727,000
Louisiana and Arkansas	93.6	1,166,700	2,608,000	2,103,000
Rocky Mountain	99.3	335,200	2,896,000	1,058,000
California	95.5	4,151,000	16,369,000	109,324,000
Total United States	95.5	17,728,700	53,132,000	137,469,000
Total last week	95.5	18,200,500	52,190,000	138,211,000
Texas Gulf Coast	100.0	3,201,600	7,183,000	9,047,000
Louisiana Gulf Coast	100.0	748,000	2,287,000	1,276,000

(1) Per cent refinery capacity represented. (2) Crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



NATIONAL TRANSIT PUMP & MACHINE CO.
OIL CITY - PENN.

Deeper Cut in Oklahoma Production

Average of 604,000 Bbls. per Day Lowest Since August, 1928. Oklahoma City Reduced to 63,000 Bbls.

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

Oil production in Oklahoma for the week ending March 8 shows another decline. The State's production was 604,000 bbls. per day, which is a decrease of 12,000 bbls. a day from the average of the week before. This is the lowest daily average Oklahoma has shown since the week of August 4, 1928. In that week the production was 592,160 bbls. In the following week it went to 604,825 bbls. and then a sudden tremendous output of crude in the Seminole area shot production above 660,000 bbls. a day in the week ending August 18.

The Oklahoma City Pool, which is the largest flush pool in the State, shows a decline under the new proration plans which were effective about 10 days ago. The decline amounts to approximately 20,000 bbls. a day. The average daily production from that pool was 63,000 bbls. for the seven days ending March 8.

Start a Sunday Shutdown

A new Sunday shut-down plan was inaugurated by the Carter Oil Co. and the Oklahoma Pipe Line Co. Sunday, March 9, and was put into effect over the previous week end in response to the recommendation of the Federal Oil Conservation Board.

The Carter Oil Co. shut down all but 3 of its 15 drilling wells an dseveral of its gasoline plants, its 2,050 pumping wells with a potential of 70,000 bbls. in all parts of Oklahoma, including the Seminole pools, at 7 a. m. for a 24-hour period.

Oklahoma Pipe Line Co. shut down its pumping stations at 7 a. m. for 24 hours and did not run any oil during that time. It is the first time in the history of the Seminole Field a pipe line company has been known to shut down its pumping stations except on account of accidents. Operators in the field whose wells are connected to the Oklahoma pipe lines were pinching the wells to equalize the new conditions.

The Oklahoma City Pool was extended during the week a quarter of a mile north and a half mile south by new producing wells. Indian Territory Illuminating Oil Co.'s No. 1 Jones Community, SW cor. Section 1-11-3w, blew in making 4,944 bbls. the first 12 hours. The oil was in the Simpson sand at 6,439-60 feet and is a quarter mile extension to the north.

Sinclair Oil & Gas Co.'s No. 2 Vincel, NE cor. NW SE Section 31-11-2w, extends production a half mile south. The well made 260 bbls. the first hour from a total depth of 6,512 feet.

Shell Petroleum Corp.'s No. 2 Petty, SW cor. NE Section 30-11-2w, blew in as a gas well the latter part of the week from sand at 6,191-6,298 feet, making about 56,000,000 feet of gas.

Phillips Petroleum Co. has announced its first location in the Oklahoma City Pool for No. 1, NE cor. Section 1-11-3w, on the north side of the pool.

Coline Oil Co.'s No. 4 Warren, SW cor. NW SW Section 18-11-2w, on the northeast side of the pool, was making 25,000,000 feet of gas and 788 bbls. of oil the first hour from the Silicious lime at 6,010 feet to a total depth of 6,492 feet.

New Completions in Oklahoma City Pool

New wells are being completed daily in the Oklahoma City Pool. Another wildcat location was staked southwest of production in the pool during the week.

Indian Territory Illuminating Oil Co. and others' No. 1 Unsell-Karger, NE cor., Section 23-11-3w, was brought onto production early in the week from the Simpson sand. It made an initial production of 125 bbls. the first hour and 2,462 bbls. the first 19½ hours. The depth of the well is 6,483-91 feet. The gas volume was small being estimated at 3,000,000 feet. It offsets a well with an initial production of 12,200 bbls. The well may be reconditioned before it is shut in for the proration period. Same companies reconditioned two other wells during the week. Both operations had been opened for a production test before. No. 1 L. Trosper, SW cor. NW, Section 12-11-3w, a Simpson sand well in the north end of the field, flowed 1,856 bbls. in 12 hours. Same company's No. 1 A. Brokaw, NW cor. NE NE, Section 13-11-3w, a Silicious lime producer in the northeast end of the pool, made 1,045 bbls. in 12 hours. The gas volume at both wells was estimated to be about 4,000,000 feet.

Shell Petroleum Corp.'s No. 5 Petty, SW cor. NW NE, Section 30-11-2w, a former oil producer, was blowing open what was estimated to be 100,000,000 feet of gas. The well suddenly blew out leaving the tools and swab in the hole early in the week The present total depth is 6,201 feet, after plugging back from a total depth of 6,505 feet.

In Tom Slick Oil Co. and others' No. 1 Hoopes, NW cor. SW NE, Section 31-11-2w, cement plugs have been drilled out and another core barrel run, which was lost. The test is important, as it will determine the extent of production on the south side of the field. It was showing oil before cementing, and is the most southerly test in the pool to make oil. The Pandem Oil Corp. and others' No. 1 Orphanage, in Section 17-12-3w, was drilling at 4,300 feet, and some express the opinion the test was favorably located on structure.

A new wildcat location was made over 1½ miles southwest of the pool by Standish, McClunty and Wade, SE cor. SW, Section 27-11-3w. The operators plan to erect a 156-foot derrick on the location within a short time.

Two new wells were added to the north end of the pool during the week. Indian Territory Illuminating Oil Co. and others' No. 1 Theimer, SW cor. NE, Section 12-11-3w, made 4,558 bbls. the first five hours. The first hour's gauge was 948 bbls. The well blew in flowing over the crown block before being switched over to separators. It had an estimated gas volume of 20,000,000 feet. The new well widens the productive territory in the north end of the pool and is the first producer on the property. The oil was found in the Simpson sand at 6,245-96 feet. The other well completed on the north side of the pool was Wirt Franklin Petroleum Corp.'s No. 7 Lowery, in approximately the NE cor. SE NW, SW cor. Section 12-11-3w. It made 11,335 bbls. the first 12 hours, and is the largest well completed on the lease to date. It made 1,164 bbls. the first hour and 961 bbls. the second hour. The gas volume was estimated to be 25,000,000 feet. The oil is coming from the Simpson sand at 6,278-6,352 feet. It is the fourth well completed on the lease which is estimated to have a potential of more than 50,000 bbls. a day.

Cromwell-Franklin Oil Co. and others' have completed another well on the Trosper Park property. The new well was No. 4, SW cor. NE, Section 13-11-3w. It made 279 bbls. the first hour and 2,975 bbls. the first 12 hours, cutting 2 per cent. The gas volume was estimated to be 40,000,000 feet of gas. The oil was found in the Silicious lime topped at 6,097 feet and drilled to a total depth of 6,450 feet.

Indian Territory Illuminating Oil Co. and others' No. 2 C. Brokaw, SW cor. SE SE, Section 13-11-3w, blew in making about 40,000,000 feet of gas and flowing mud, rocks and oil before being turned into the separators. The well made 563 bbls. in one hour from the Silicious lime at 6,050 feet, and the total depth 6,475 feet. The oil was cut 6 per cent. It was shut in after being tested for one hour. Same company's No. 1 L. Banta, SW cor. SE, Section 18-11-2w, made its first oil during the first part of the week showing 70 bbls. from 15 hours swabbing, and making a total of 706 bbls. The well is producing from a total depth of 6,665 feet. It is located on the east side of the pool near what some geologists term the fault line. Same company's No. 2 Unsell-Krager, NW cor. NE NE, Section 23-11-3w, was delayed while the rig was being boarded up to prevent oil from spraying over nearby property. The test has reached a total depth of 6,394 feet in Simpson sand and is ready to bail down.

Most Northerly Oil Showing

Indian Territory Illuminating Oil Co. and others' No. 1 Jones Community, SW cor., Section 1-11-3w, the most northerly test in the pool to show oil is bailing the hole at a total depth of 6,457 feet, in Simpson sand. If this operation should make a commercial well it will extend production a quarter mile to the north. It may be several days before the test is completed.

Two large gas wells continue to blow wild in the pool, causing roads to be blocked in all directions and making it impossible to have open fires in the vicinity. Indian Territory Illuminating Oil Co. and others' No. 3 Emerson Joyce, SE cor. NE NE, Section 25-11-3w, was estimated to be making 75,000,000 feet of gas. A large volume was escaping around the connections. The gas was found in the Silicious lime, the top of which was found at 6,225 feet, total depth 6,484 feet. The other gas well was the Shell Petroleum Corp.'s No. 5 Petty, which also made 233 bbls. of gasoline and 100,000,000 feet of gas.

Heenan & Co.'s No. 1 Cunningham, N half SW NE SW, Section 1-11-3w, on the north side of the pool, had the top of a sand at 6,122 feet, and was drilling at 6,225 feet, in green shale and sand with a showing of oil. Some express the opinion the sand may be in the Detrital zone but it is believed the pay, if it is found, will be deeper.

New Gas Line Started

The construction of the new gas pipe line to the Oklahoma City Pool was started during the week. The new line will be of 20-inch pipe, branching from the main line of Cities Service Gas Co. near Mulhall, south of Perry, Noble County, and will extend to the new pool south of Oklahoma City. It is estimated the line will have a capacity of 100,000,000 feet of gas a day, and will handle surplus gas from the pool. The new line is expected to be completed in about two months.

Shut-In Production

The initial production of the shut-in wells in the Oklahoma City Pool that had been allowed to produce for 24 hours or less as of March 7 was 225,256 bbls. The initial production of the wells and the approximate date each well will be opened follows:

Company, lease—	Well No.	Bbls.	Date
I.T.I.O.:			
Fortson-Farley	1	8,955	3-11-30
Watters	*3	2,204	none
G. Button	3	11,118	3-24-30
A. Bodine	5	19,673	3-25-30
Trosper	*8	3,594	3-18-30
Trosper	*10	16,136	3-30-30
Farley-Fuzzell	1	†28,800	4-23-30
Button	4	6,996	3-30-30
Trosper	*9	3,538	3-21-30
A. Brokaw	2	4,599	3-24-30
Trosper	*6	1,925	3-26-30
Fortson	3	19,239	4- 5-30
Drake	*1	4,631	4-18-30
L. Trosper	1	4,080	4-23-30
A. Brokaw	1	‡7,018	4-24-30
Hiddleston	1	§1,525	4-24-30
Jones	*1	6,241	4-24-30
Trosper	5	167	4-30-30
L. Canfield	2	‖1,374	5- 2-30
N. Emerson	*2	¶3,545	5- 2-30
S. Bodine	3	†801	5- 3-30
Thomas Fuzzell	3	**3,524	5- 3-30
A. Bodine	6	3,612	5- 4-30
Canfield Button	2	2,686	5- 4-30
Barker-Drake	*1	2,589	5- 4-30
Unsell-Krager	*1	††2,462	5- 9-30
Theimer	*1	‡‡4,558	5-10-30
C. Brokaw	2	‡‡563	5-10-30
Prairie:			
Hiddleston	6	14,000	4-21-30
Hiddleston	7	5,685	4-22-30
W. Franklin:			
Lowery	*4	8,376	4-23-30
Cromwell:			
Trosper Park	*4	¶2,975	5-10-30
W. Franklin:			
Lowery	*7	¶11,335	5-11-30
I.T.I.O.:			
Jones	*1	¶4,944	5-12-30
Sinclair:			
Vincel	*2	‡‡260	5-14-30
Coline:			
Warren	4	‡‡788	5-13-30
Total	36	225,256	

*Wells producing from the Simpson sand. All others are producing from the Arbuckle lime. †Estimated. ‡5 hours. §15 hours. ‖3½ hours. ¶12 hours. **2¾ hours. ††19½ hours. ‡‡1 hour.

The production from the Oklahoma City Pool for the week ending March 10 was as follows:

Day—	Bbls.	Wells
March 4	62,206	24
March 5	61,710	22
March 6	54,213	20
March 7	38,654	21
March 8	60,384	25
March 9	67,998	25
March 10	34,474	20

(Continued on Page 190)

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW, Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE, Sec. 14-24-11w.	Rigging up standard tools 4,660 ft

BECKHAM COUNTY

Kay et al's No. 1 Martin, C E half E half NW, Sec. 32-8-24w	T. D. 3,335 ft.; P. B. 1,990 ft.
Producers Exploration Co.'s No. 1 Seidell, SE cor. SW SW, Sec. 17-9-22w	Shut down 2,402 ft.
Carson et al's No. 1 Danby, SW cor. SE NE, Sec. 20-8-22w	Shut down 1,575 ft.

BLAINE COUNTY

Lowen et al's No. 1 Unknown, NW cor. SW NW, Sec. 17-16-11w	Spudded and shut down.
Washoma Oil Co. et al's No. 1 Phillips, C NW SW, Sec. 12-19-10w	Shut down 2,935 ft.

CADDO COUNTY

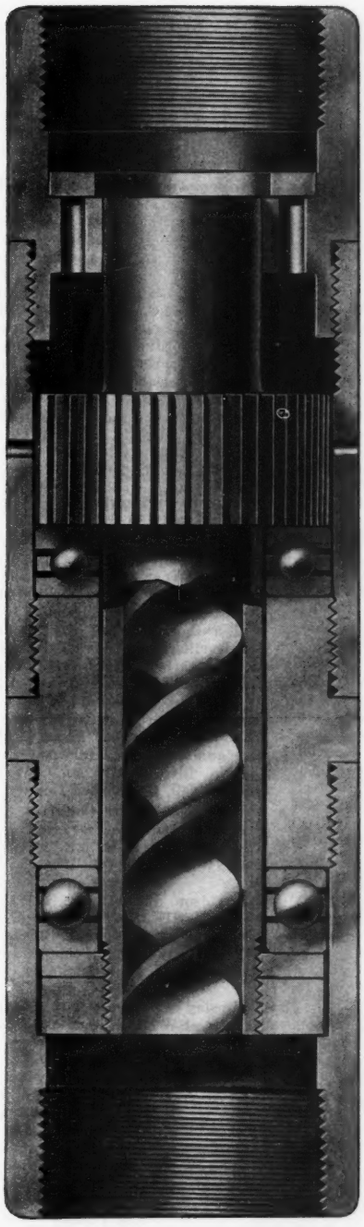
Abernathy & Brown's No. 1 Horton, SE cor., Sec. 8-6-13w.	Shut down 596 ft.
W. J. Hartley's No. 1 Galbreath, SE cor. NW SE, Sec. 29-5-12w	Shut down 3,394 ft.

CLEVELAND COUNTY

Harris et al's No. 1 Highbee, SE NW, Sec. 20-6-1	Drlg. 3,790 ft.

(Continued on Page 220)

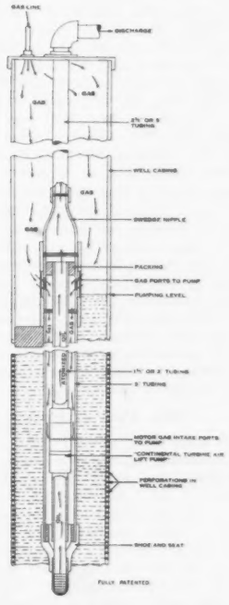
The *Advanced* principle of lifting Oil *economically*



Regarded as one of the most revolutionary improvements in oil well pumps since the inception of the Petroleum Industry, the Continental Pump offers a simple and highly efficient method of lifting crude. This improved pump utilizes the atomizing method whereby the oil is elevated from its fluid level through tubing by a combination of mechanical atomization and hydrostatic load relief.

New Operating Principle

The Continental Pump involves the application of a minimum pressure of either air or gas after the kick-off into an enclosed area within the bottom of tubing and its introduction into the pumping element through angled port holes. This pressure is trajected through port holes and exerts its force upon a motor which operates not unlike a steam turbine. The motor within the pump is equipped with a continuous series of vanes. An impeller rotates with the motor, picking up the oil. The air or gas, leaving the motor, strikes the oil column at the top of the pump and effects complete atomization. The gas or air cannot slip. The oil rides along with the gas by reason of atomization and is brought to the surface where the gas or air separates, leaving solid liquid.



Construction of the Pump is simple indeed. The entire assembly weighs no more than 15 lbs. in the 2½" size. No special fittings, no plungers, no sucker rods,—nothing to cause rapid wear or trouble.

Continental Equipment Co.
Subway Terminal Bldg., Los Angeles, Calif.

Descriptive literature will be sent upon request. Distribution arrangements for Mid-Continent and all other fields are now being completed.

Continental Pump

Pressure Lift ~ Atomizing Turbine

Five New Wells in Voshell Pool

Now 16 Wells in McPherson County Pool With Potential of 18,000 Bbls. Ritz Pool Extended. New Wells in Old Pools

By W. A. Spinney
Staff Correspondent, Kansas Fields

The Voshell Pool in McPherson County, Kansas, now has 16 oil wells. Five new wells were added to the pool during the week. The new wells are expected to increase the potential production to approximately 18,000 bbls. a day.

Skelly Oil Co.'s No. 1 Johnson, NE cor. SW, Section 21-26-17w, a wildcat in Edwards County, has reached a total depth of 4,540 feet. It is expected to drill in to the pay horizon in a few days. The test is southeast of the British American Oil Co.'s No. 1 McCarty, in Section 31-25-17w, also a wildcat, which found oil at 4,543 feet last summer, and has been producing 50 bbls. of oil a day and 15,000,000 feet of gas.

The Ritz Pool, in McPherson County, was extended by the Shell Petroleum Corp.'s No. 1 in Section 36-19-2w. Chat was found at 2,972 feet. The well was flowing by heads and made 120 bbls. the first 14 hours.

The Voshell Pool was extended to the northwest, west and southwest during the week. The Gypsy Oil Co.'s No. 1 Stuckey, SE cor. SW, Section 4-21-3w, swabbed 325 bbls. in 8 hours and 700 bbls. in 18 hours, and was estimated to be a 900-bbl. well. The oil was found in the Simpson sand at 3,458-69 feet, and extended the producing area a quarter mile northwest. Same company's No. 1 Krehbiel, SW cor., Section 3-21-3w, swabbed 272 bbls. in six hours from the Simpson pay at 3,424-28 feet, and 1,020 bbls. the first 24 hours. The well is a diagonal offset to the discovery well.

Dixie Oil Co. and Amerada Petroleum Corp.'s No. 1 Voshell, NE cor. SE NW, Section 9-21-3w, extended the producing area a half mile west. Simpson sand was found at 3,502 feet, and the well was drilling in it at 3,514 feet, with 1,000 feet of oil in the hole.

The other well extending the pool was the Shell Petroleum Corp.'s No. 2 Stuckey, NW cor. SE SE, Section 9-21-3w. It swabbed 202 bbls. in 4½ hours from the Simpson sand at 3,342-50 feet, and 600 bbls. in 19 hours. Same company's No. 3 Stuckey, SW cor. SE SE, Section 9-21-3w, found a hole full of oil in the Simpson at 3,363-70 feet, and swabbed 1,283 bbls. in 23 hours.

Sinclair Oil & Gas Co.'s No. 4 Voshell, NW cor., Section 10-21-3w, has completed a fishing job caused by the rig having been swept by fire about two weeks ago. Six-inch casing will be landed on top of the Viola lime at 3,319 feet. Indian Territory Illuminating Oil Co.'s No. 2 Stuckey, SW cor., Section 10-21-3w, on the extreme south edge of the pool, a quarter mile south of production, was coring the Viola lime at 3,404 feet, where it had a showing of oil.

Ritz Pool Extended

The Ritz Pool, in McPherson County, was extended during the week by the Shell Petroleum Corp. and others' No. 1 Koehn, C SE, Section 12-20-2w. The new well has extended oil production nearly a mile southeast. It was estimated to be making between 50 and 80 bbls. of oil an hour into the slush pits. The oil was found in chat at 2,934-74 feet. The well is about a half mile north of a gas well completed about a year ago.

Two miles south of the Ritz Pool, in the eastern part of McPherson County. Darby Petroleum Corp.'s No. 1 McPherson College, in Section 13-20-2w, found a hole full of water in chat at 2,977 feet. The test was underreaming the casing to drill to the Simpson sand. The Dixie Oil Co.'s No. 1 Johnson, SW cor., Section 20-17-3w, a wildcat south of Lindsborg, was drilling at 3,320 feet, expecting to locate the Viola around 3,400 feet.

Wilcox Sand in Montgomery

Southeastern Kansas in Montgomery County reports a new Wilcox sand well. The well was drilled by McWharter, Black and Dial, NW cor. SW, Section 6-34-17, 6 miles north of Coffeyville, and was flowing 2 bbls. an hour from the Wilcox sand at 1,182-83 feet. The oil tests about 25 degrees gravity. Some estimate the new well at 100 bbls. a day on the pump. It is shut down awaiting a pipe line connection. The well is located in a shallow gas pool developed about six years ago by the Kedge Oil & Gas Co. About 8 miles south the Red Bank Oil Co. opened a Wilcox sand pool a few years ago, and a similar pool was found the same distance north by the Coffeyville Brick Co.

A semiwildcat test has been announced by the Aladdin Petroleum Co. and Phillips Petroleum Co. and others in Section 29-20-10, Lyon County. The location is southwest of Emporia, and is the first in the vicinity of Bird, Hanley and Sheedy's new well in Section 30-20-10, which extended the production in that area. It is believed the Bird, Hanley & Sheedy well establishes a trend through the territory.

166 Oil Wells in Sedgwick

Sedgwick County had 166 producing oil wells with a daily average of approximately 22,000 bbls. at the close of February. The Valley Center Pool has 113 wells that yield about 18,000 bbls. a day, which are under a 50 per cent curtailment plan, and are producing about one-half of their potential. The four wells in the Goodrich Pool, in the north side of the county, were making about 700 bbls. a day. The discovery well, once a 5,000-bbl. producer, is making around 500 bbls. daily. The Robbins Pool, about 4 miles south of Wichita, has eight producing wells making about 460 bbls. a day. The Greenwich Pool, which includes the Lygrisse area, and the townsite wells, was making about 3,000 bbls. a day from 36 wells. The country has four other producing wells which were producing small amounts. Fisher & Lauck and others' No. 1 Mackey, in Section 30-27-1, 50 bbls.; Prairie Oil & Gas Co.'s No. 1 Cross, Section 27-25-1w, 10 bbls.; Mars Oil Co.'s No. 1 Miller, Section 2-26-2, 45 bbls.; Producers & Refiners Corp.'s No. 1 Kuske, Section 24-25-1, 120 bbls.

In the Greenwich district, Shell Petroleum Corp.'s No. 6 Fisher, in Section 15-26-2, Sedgwick County, swabbed 698 bbls. the first 20 hours from the Viola at 3,208-10 feet. The well is to be put on the pump. In the Valley Center Pool, Continental Oil Co. and Gypsy Oil Co.'s No. 7 Reed, NE cor. SW SE, Section 1-26-1w, was drilling at 3,150 feet and was expected to reach the pay horizon in a few days. Same company's No. 8 Reed, NW SW SE, Section 1-26-1w, was drilling at 2,000 feet.

Sumner County

E. K. Cary and Laredo Oil Co.'s No. 1 Welsch, SW cor. SE, Section 21-30-1w, Sumner County, a wildcat in the northern part of the county, was showing about 4,000,000 feet of gas at 3,846-60 feet. The test was drilling at 3,887 feet, and was expected to reach the Simpson sand shortly. If production is found in the test it may open a new pool, as it is about 3 miles from any other oil production. Lario Oil & Gas Co.'s No. 1 Osborne, a wildcat, found water in the Silicious lime at 4,006 feet. It may be abandoned. Blackwell Oil & Gas Co.'s No. 1 Clift, SE cor. NW, Section 26-33-3w, north of the State Line Pool in Sumner County, was drilling at 1,800 feet.

New Wells in Old Pool

In the old Eldorado Pool in Butler County, Empire Oil & Refining Co. has completed some new wells. The company has what is estimated to be a 75-bbl. producer in its No. 93 Koogler, NE cor. SW NE Section 20-26-5, Butler County. The oil was found in the Simpson sand at 2,472-2,544 feet, and was given a 110-quart shot. Same company was completing another well, its No. 95 Koogler, NE cor. NW SW Section 20-26-5. The Simpson sand was found at 2,522-43 feet. No estimate was made regarding the size of this well. Same company's No. 19 Houston, in Section 19-26-5, bailed 35 bbls. in 20 hours from the Simpson sand at 2,595-2,614 feet. The same company's No. 94 Koogler, NW cor. SW NE, was landing the 8-inch casing at 2,280 feet. The only failure in the group was the same company's No. 20 Hess, SW cor. SE NW Section 18-26-5, in which water was found in the Simpson sand at a total depth of 2,675 feet.

Greenwood Developments

In the western part of Greenwood County, the Derby Oil & Refining Co. and others have located No. 1 M. Burk, NE cor. NW NW Section 36-23-8. The test is being drilled in hope of finding another trend to the Scott Pool. Over the last several years the search for an extension to the Scott Pool has resulted in a number of dry holes. J. R. Hayes, a partner in the new test, was one of the pioneers in the Scott Pool, which was discovered by Hays & Robertson and the Greenland Oil Co. Another active area in the same county is the Virgil district. Lewis and others were rigging up on the Erickson lease in Section 7-24-13. In the same area Shell Petroleum Co. was spudding E. D. Ellis lease in Section 7-24-13. Roth & Faurot were rigging up for a test on the Dame lease in Section 30-24-13. Sinclair Oil & Gas Co. were preparing to spud on the G. S. Beaver lease in Section 25-24-12. Walton Oil Co. was rigging up on its location on the Berry lease in Section 24-23-13. Bird, Hanley & Sheedy were drilling around 1,000 feet on the W. H. Dalton lease in Section 25-24-12.

In the Hamilton district of Greenwood County, the Syndicate Oil Co.'s No. 1 Shook, NW cor. SW NW Section 6-24-12, was estimated to be a 100-bbl. well. Preparations were being made to give the well a shot. The oil was found in the Bartlesville sand at 1,701-78 feet, the total depth being 1,783 feet. After shooting with 200 quarts, it swabbed 240 bbls. in 10 hours, still cleaning out. Another test in the area south of the Wiggins Pool, on a block of about 1,200 acres, was announced by Harwood and others for No. 1 Good, SW cor. NW NE Section 36-25-9, Greenwood County.

Barber County

Barbara Oil Co. is erecting the rig for No. 1 Alexander "B," SW cor. NE SW SW, Section 7-33-12w.

Butler County

Davidson and others' No. 1 Phillips, NW cor. SW, Section 18-27-4, is a rig. Jones and others' No. 1 Black, NE cor. NW NE, Section 31-23-6, is dry and abandoned at 2,666 feet.

Coffey County

Hinsley and others' No. 2 Barngrover, SE cor. SW NW, Section 7-23-15, has been completed for 25 bbls. in sand 1,559-72 feet.

Cowley County

Crow and others' rig is up for No. 1 Conrad, SE cor. NE, Section 8-32-5. Roth & Faurot's No. 1 Adam, SW cor. NE NE, Section 19-32-8, is a rig. No. 1 Holt, SW cor. NE SE, Section 12-32-4, has been completed for 115 bbls. in sand 2,588-93 feet.

Elk County

Union Gas Corp.'s No. 1 Ware, C NE NE, Section 5-31-9, is drilling deeper at 2,240 feet.

Ellis County

Mid-West Exploration Co.'s No. 24 Austin, NE cor. SE NE, Section 36-12-16w, made 213 bbls. in sand 3,036-69 feet. Barnsdall Oil Co.'s No. 2 Johnson, SE cor. NE SW, Section 9-13-19w, is dry and abandoned at 3,805 feet.

Greenwood County

O'Neil and others' No. 1 Harlan, NE cor. NW NW, Section 34-22-11, is a rig. Derby Oil Co. and others made location for No. 1 Burke, NE cor. NW NW, Section 36-23-8. Lewis and others' No. 1 Errickson, SE cor. NW SE, Section

(Continued on Page 188)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

BARBER COUNTY

Company, farm and location—	Remarks:
Skelly Oil Co.'s No. 1 Temple Ranch, Section 13-34-15w	Drlg. 4,950 ft.
Robertson et al's No. 1 Powell, SE cor. SE Sec. 11-32-10w	Drlg. 3,993 ft.

BARTON COUNTY

Prairie's No. 1 Davidson, NW SE Sec. 4-16-11w	Drlg. 2,635 ft.

BUTLER COUNTY

Shell Petroleum Corp.'s No. 1 Harper, SW NE Sec. 35-26-3	Shut down 3,044-46 ft.; water.
Martin et al's No. 1 Flanigan, C SW SE SW Sec. 29-27-3	Drlg. 2,470 ft.

CHASE COUNTY

Urschell et al's No. 1 Lipps, C SW SW Sec. 27-18-6	Shut down 700 ft.
Steinbuckel et al's No. 1 Stephenson, NE SW Sec. 4-20-6	Drlg. 1,320 ft.
Steinbuckel et al's No. 1 Cook, SE cor. Sec. 21-19-8	Drlg. 950 ft.
E. W. Marland, Inc.'s No. 1 Altemus, SE NE Sec. 33-18-6	Drlg. 2,200 ft.

CHAUTAUQUA COUNTY

Morrow & Son's No. 1 Tucker, C NW NE Sec. 30-32-11	Drlg. 1,500 ft.

CLAY COUNTY

Chrisler et al's No. 1 Tivier, SW cor. Sec. 19-8-3	Shut down 50 ft.

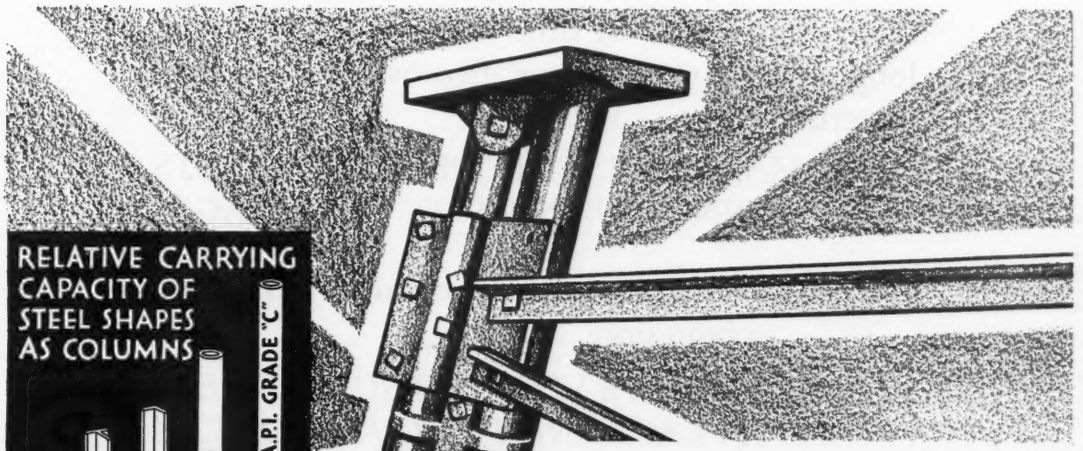
COWLEY COUNTY

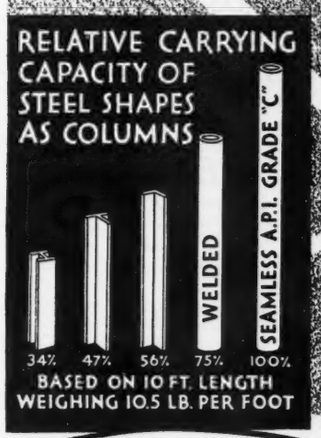
Roth & Farrout's No. 1 Adams, C SW NE NE Sec. 19-32-8	Rig on ground.
Prairie O. & G. Co.'s No. 1 Dosbaugh, SE cor. Lot 27, Sec. 18-32-8	Drlg. 990 ft.
Edenfield & Fair's No. 1 Wallace, CWL NE Sec. 17-34-4	Comp. 365-75 ft.; 2,000 ft. gas.
Milton & Mead's No. 1 Tatum, SE cor. SW Sec. 11-31-6	Shut down 2,000 ft.

DICKINSON COUNTY

Emery-Curtis & Bryan's No. 1 Hevner, NW SE Sec. 31-13-3	Rig.
Cress' No. 1 Sanden, NE cor. Sec. 12-15-2	Rig.
Prairie's No. 1 Lachard, C NW SW NE Sec. 12-16-2	Drlg. 2,935 ft.
Hiatt & Durham's No. 1 Wendt, NW cor. Sec. 17-16-2	Spudding.
Kruger et al's No. 1 Diche, C NW NE NE Sec. 17-13-4	Shut down 2,390-2,400 ft.; water.
E. N. Morgan's No. 1 Whithair, NW SE Sec. 9-12-1	Shut down 1,325 ft.

(Continued on Page 219)

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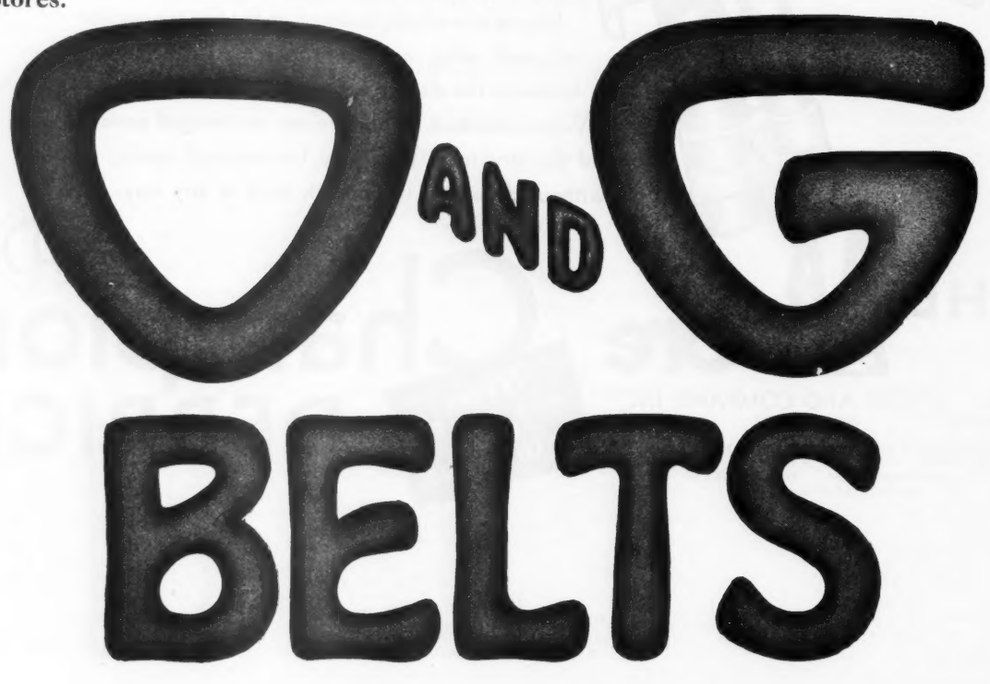

Zwolle Pool Has 1,000 Barrel Well

Carterville and Zwolle Busiest Areas in North Louisiana. Zwolle Shows Signs of Being Spotted. Arkansas Quiet

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Mar. 10.—Veterans of Homer, El Dorado, Smackover or any other "boom" oil towns will be perfectly at home, surrounded by familiar sights and sounds—and smells—at Zwolle. During the last two weeks the wide, open space just east of town, between it and the Lide well, has sprouted derricks until it looks like a fistfull of toothpicks stuck in a cake. Twenty-three derricks that were not there two weeks ago are in sight from the edge of town and many more are hidden in the thick woods farther east. In town are four, and locations have been made for as many more. The same story might be told of the Carterville district of Bossier Parish, the difference being that there is no town there.

With Carterville and Zwolle things are looking up very much in north Louisiana, and Arkansas is having a little new life of its own from activity in the Urbana district. Seventy-four news operations ranging from locations to drilling wells have been begun in the last two weeks, practically all of them in Carterville and Zwolle, with a half dozen or so scattered in the Monroe and Richland gas areas.

Development in the two "hot spots" is of a widely different character. In Carterville it is practically all by major companies and independents who long have had protection or production there while in Zwolle there has lately been a scramble for leases, and wells are being drilled on town lots and leases 2½, 5, 10, 20 and 40 acres. The area is spotted and there are bound to be some expensive disappointments. Already there have been failures, three in the week just closed and one the previous week. The first dry hole was Tippett Drilling Co.'s No. 1 Hughes, Section 36-8-12, dry at 2,600 feet. The past week's failures were Haynes Brothers' No. 1 Dover, Section 28-8-12, 1½ miles north of the discovery well, salt water at 2,800 feet; Ruston Drilling Co.'s No. 1 Holliday, Section 35-8-12, salt water at 2,728 feet and Warner-Quinlan's No. 1 Sabine Lumber Co., Section 34-8-12, salt water at 2,730 feet.

Haynes Brothers' well looked like a producer for awhile when it filled up 500 feet with oil. It was shot at 2,683 feet without improving it and then was drilled to 2,800 feet. Ruston Drilling Co.'s well also was shot after it had filled up 100 feet with oil from 2,728 feet but was not deepened after the shot failed to improve its performance. These two wells are a half mile northeast of the discovery.

1,000-Bbl. Well in Zwolle

V. M. Miller's No. 1 Colquitt, Section 31-8-12, Zwolle district, two locations north of Lide and others' big well, had blown in with an estimated initial production of 1,000 bbls. from a total depth of 2,191 feet. Lide's well was completed at 2,204 feet and there is practically no variation in surface elevations. Miller set 6⅝-inch casing at 2,776 feet and was drilling in with cable tools when it happened. After cleaning itself the well was pinched in to 500 bbls. at which rate it flowed for 12 hours and bridged, and is now cleaning out with cable tools. Benedum & Trees Oil Co. is continuing bailing No. 2-A Bowman-Hicks, Section 3-7-12, claiming 150 feet of oil in the hole, total depth 2,515 feet. Ruston Drilling Co. got a show at 2,473 feet, bailed dry, let stand and found 35 feet of oil in the hole from 2,524 feet and is arranging to deepen, total depth 2,563 feet.

Bridges-Clark Oil Co.'s wildcat in Section 3-9-12, almost repeated the performance of their No. 1 Guy in Section 33-10-12, Pleasant Hill district, when it blew in with an estimated 10,000,000 feet of gas and a spray of salt water, total depth 3,284 feet. It was drilling in lime and suddenly hit a break that lasted for 3 feet in a sandy lime when the gas blew out. The flow was killed and 6-inch will be set for a test.

Triangle Drilling Co.'s wildcat in Claiborne Parish, No. 1 Kilpatrick, Section 7-19-5, Sugar Creek district, 18 miles southeast of Homer, has not lived up to the hopes it inspired three weeks ago. Setting tubing at 4,540 feet did not help it much. It flowed about 10 bbls. of oil and plenty of water, so the crew pulled tubing and liner and after drilling to 4,558 feet shut down for orders with the same amount of gas showing and 2,000 feet of fluid in the hole.

Production By Pool

Production from the district dropped 455 bbls. from last week's daily average runs from the field, all but 50 bbls. of it due to Arkansas and most of that in Smackover heavy oil runs. Differences in all other producing districts were no more than the usual day to day or week to week fluctuations. Total runs averaged 99,850 bbls. compared to 100,305 bbls. the week before. Louisiana runs were 41,745 and Arkansas 58,105.

Daily average runs from the several pools were:

NORTH LOUISIANA

Caddo, light	10,395
Caddo, heavy	2,655
Homer	3,560
Haynesville	4,510
DeSoto-Red River	3,060
Elm Grove	455
Bellevue	650
Cotton Valley	2,260
Urania	5,050
Pleasant Hill	700
Sarepta-Carterville	3,125
Zwolle	5,325
Total North Louisiana	41,745
Week ending March 1	41,795
Difference	50

ARKANSAS

El Dorado	4,020
Smackover, light	5,285
Smackover, heavy	41,205
Stephens	915
Nevada County	1,100
Lisbon	1,040
Champagnolle	4,310
Bradley	80
Mount Holly	150
Total Arkansas	58,105
Week ending March 1	58,510
Difference	405
Both states	99,850
Week ending March 1	100,305
Decrease	455

Long Delayed Success

More optimistic news came from Benedum & Trees Oil Co.'s No. 1 Johnson in Section 7-11-13, DeSoto Parish, just as much a wildcat as the Triangle's in Claiborne. It is a gas well gauging 12,859,560 feet at 960 pounds, total depth 2,865 feet. Location is about 5 miles south of Mansfield and a short distance east of what is loosely defined as the limit of the old Spider district of DeSoto Parish where much of the earliest drilling in north Louisiana was done after Caddo was discovered. It will help take some of the sour taste out of these operators' mouths for they and others have spent plenty of money on DeSoto wildcats and have not had much to show for it. Benedum & Trees' block is of approximately 3,500 acres.

Carterville's smallest producer was completed by Natural Gas Producing Co., No. 1 U. S. Government, Section 31-23-11, at 3,174 feet. Air Lift Oil Co. and Bahan & Bahan's No. 1 Mays, Section 26-23-11, which holds some promise of marking an extension of the new deep stuff considerably to the northeast is not a well yet. Drill stem test of 10 feet of sand at 2,960-70 feet resulted in 18 fourbles of oil and three of salt water, so they set 6⅝-inch on top of the sand and next week's test will probably tell the tale. Palmer Corp.'s No. 1 Roberson, a quarter-mile northeast of this well, is waiting for standard rig with 2,000 feet of oil in the hole, total depth 3,175 feet. Phillips Petroleum Co.'s No. 1-A Bollinger in Section 30-23-11, on the other hand is standing 300 feet in oil from 3,247 feet and awaiting standard rig. It is by far the deepest show that Carterville has yet produced and between it and the Air Lift Oil Co.'s well opens the way for much speculation and future experimenting after the 3,100-foot pay has had its day.

Dry Holes in Caddo

Caddo's completions were full of bad news. An echo of last summer's Dixie activity appeared in Dixie Oil Co.'s abandoning location for No. 1-B Dickson in Section 10-19-14, and Thomason & Fitzsimmon's No. 1 Howell, Section 13-22-16,

(Continued on Page 188)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

NORTH LOUISIANA

AVOYELLES PARISH

Company, farm and location—	Remarks—
R. E. Tippett's No. 1 Chateline, NE NE, Sec. 34-1n-3e	Rigging up.

BOSSIER PARISH

H. S. Autrey's No. 1 Smith, 200 ft. S, 200 ft. W, NE cor. NW NW, Sec. 26-19-11	O.W.D.D; T.D. 1,836 ft; plugged back to 1,500 ft. and cmtd. 4½-in; bailing to test; T.D. 1,510 ft.
Neil & Lanier's No. 1 Biedenharn, SE cor., Sec. 23-21-14	W.O.S.R; 980 ft. oil in hole; T.D. 998 ft; arranging to re-test at 998 ft.
S. P. Lanier's No. 1 Le Rosen, 300 ft. S, 1,000 ft. W, NE cor., Sec. 26-21-14	Derrick.
Walker et als' No. 1 Antrim, NW cor. SE, Sec. 28-22-13	S.D. 3,184 ft.
C. L. West et als' No. 1 Sentell & Dickson, 2,310 ft. W, 895 ft. N, SE cor., Sec. 3-20-13	Arranging drill stem test 1,900 ft.

CADDO PARISH

Magnolia Pet. Co.'s No. 1 Swann, 330 ft. N, 330 ft. W, SE cor. NE SW, Sec. 16-21-14	Rig up.
L. B. Mawk's No. 1 Swann, 440 ft. N, 200 ft. E, SW cor., Sec. 23-21-14	Rigging up.
R. W. Norton's No. 1 Hill, 630 ft. N, 1,260 ft. W, SE cor. NE, Sec. 33-23-16	D.S. test 8-ft. sand 4,479 ft; S.W; S.D. 4,496 ft.
I. N. Pharis, trustee's No. 1 Oden, NE cor. SE NE, Sec. 16-19-14	S.D. 2,322 ft; topped sand at 2,396 ft; set 6⅝-in; T.D. 2,409 ft.
C. W. Robinson's No. 1 Wilson, 990 ft. S, 330 ft. W, NE cor. SE, Sec. 2-15-16	Began drlg. Feb. 17; drlg. 175 ft.
Old River Oil Co.'s No. 1 Sibley, 300 ft. E, 300 ft. S, NW cor. SE, Sec. 15-19-14	W.O.S.R. 2,455 ft.
Triangle Drlg. Co.'s No. 1 Hardy et als, 660 ft. N, 660 ft. W, SE cor. fractional Sec. 18-19-16	Drlg. 1,000 ft.

CATAHOULA PARISH

Lochnager Pet. Co.'s No. 1 Taliaferro, 572 ft. E, 396 ft. S, C, Sec. 26-9-6	S.D. 900 ft.

CLAIBORNE PARISH

El Dorado Chief Oil Co.'s No. 1 Dance, C SW NE, Sec. 27-20-7	S.D. 2,240 ft.
Leue Oil Co.'s No. 1 Taylor, Sec. 16-22-6	Derrick.

(Continued on Page 181)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH—CARTERVILLE

Company, farm and location—	Remarks—
Bahan & Bahan's No. 1 G. W. May, 660 ft. S, 660 ft. W NE cor., Sec. 26-23-12	D.S. test 10-ft. sand 2,960-70 ft. showed 18 fourbles oil and 3% S.W; cmtd. 6-in. 2,960 ft.
Bahan & Bahan's No. 1 Floyd Pleasant, 150 ft. N, 150 ft. W, C, Sec. 25-23-12	Derrick.
E. W. Bateman's No. 1 Bollinger, 200 ft. S, 200 ft. E, NW cor., Sec. 38-23-11	Location.
E. W. Bateman's No. 2 Bollinger, 200 ft. S, 200 ft. W, NE cor., Lot 29, Sec. 38-23-11	Location.
Del.-La. Dev. Co.'s No. 6 Bolinger, 330 ft. S, 220 ft. W, NW cor. Lot 17, in Lot 16, Sec. 31-23-11	Rigging up.
Greenwood Prod. Co.'s No. 1 Bollinger, 1,980 ft. N, 1,150 ft. E, SW cor. SE, Sec. 36-23-12	O.W.D.D. 3,071 ft.
Goodman-Johnson's No. 1 Martin, 330 ft. S, 330 ft. E, NW cor. SE, Sec. 26-23-12	W.O.S.R; T.D. 3,169 ft.
Lee Kinnebrew's No. 1 Garnett, 200 ft. S, 200 ft. W, NE cor. SW NW, Sec. 36-23-12	Drlg. 1,500 ft.
La. Pet. Corp.'s No. 1 J. W. Peyton, 1,170 ft. S, 150 ft. W, NE cor. SE, Sec. 25-23-12	Cmtd. 6⅝-in. 3,116 ft.
La. Pet. Corp.'s No. 3 Peyton, 660 ft. S, 150 ft. W, NE cor. SE, Sec. 25-23-12	Cmtd. 6⅝-in. 3,113 ft; T.D. 3,117 ft.
Lide et als' No. 1 Farrington, 330 ft. N, 330 ft. W, SE cor. NW NW, Sec. 23-23-12	Rig up.
La. Oil Ref. Corp.'s No. 1 Matlock, 2,970 ft. S, 990 ft. E, NW cor., Sec. 26-23-12	Rig up.
H. L. Hunt's (was Love et als') No. 1 Allen, SE cor. NE NE, Sec. 30-23-11	Began drlg. Feb. 28; cmtd. 10-in. 300 ft; drlg. 1,300 ft.
H. L. Hunt, Inc.'s No. 4 J. W. Peyton, Sec. 25-23-12	Began drlg. Feb. 23; cmtd. 10-in. 300 ft; drlg. 1,900 ft.
H. L. Hunt, Inc.'s No. 5 J. W. Peyton, 990 ft. W, 330 ft. S, NE cor. SE, Sec. 25-23-12	Began drlg. Feb. 27; cmtd. 10-in. 350 ft; drlg. 1,600 ft.
H. L. Hunt, Inc.'s No. 6 J. W. Peyton, 990 ft. S, 990 ft. W, NE cor. SE, Sec. 25-23-12	Rigging up.
H. L. Hunt, Inc.'s No. 7 J. W. Peyton, 990 ft. S, 990 ft. E, C, Sec. 25-23-12	Location.

(Continued on Page 182)

Second Producer in Williamson County

Well in Pettus Area, Bee County, Flowing 79 Bbls. Hourly Through Small Choke. New Shallow Pool in Zapata

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Mar. 10.—Williamson County's second producer is in. It is E. L. Chapman's No. 1 Fuch, two offsets south of the discovery well. It was bailing Saturday and last reports available were it would make a well of some kind. Total depth of the second producer is 1,832 feet. The Simms Oil Co.'s No. 1 L. E. Lawrence, 800 feet south and east of the discovery well of the field was coring Saturday at 1,870 feet and not looking so good and Sconyers and others' No. 1 Abbott, 1,500 feet north of the discovery well, was down 1,765 feet and had set casing and was due to drill in early this week. Williamson County has taken a lot of the attention of Southwest Texas independents of late and unless the field should develop a lot of dry holes promises to take more attention since acreage there is in the hands of independents.

Hill, Nagel & Hill opened a new shallow pool in Zapata County, in the Laredo district last week. O. W. Killam found a new gas sand near Bruni in Webb County good for about 60,000,000 feet of gas in his No. 18 Bruni which has checked three gas sands in this career, all running high.

The last gauging of the Darst Creek Field put the total potential production of the field to 111,031 bbls., including the production of the Magnolia Petroleum Co. with the exception of the Magnolia's No. 1 Appling and No. 1 Roamel which were not gauged the last time. Another proration gauge is taken this week. The allowable production of the field is held to 10,000 bbls. plus 1,108 bbls. for the Magnolia or a total of 11,108 bbls. for the field. Dry holes have been drilled around the Magnolia's No. 1 Appling and No. 1 Roamel which are offset wells and each undoubtedly producing from crevices. This is presumed to be the reason they were not gauged the last time and production is probably not restricted from them.

Three of the completions in the Darst Creek Field in Guadalupe County last week were by The Texas Company with a total initial production of 6,000 bbls. of oil per day. One was by the Gulf company for 1,400 bbls., one by the Sun Oil Co. for 1,400 bbls. and one by Jake Jarman swabbing 40 bbls. the first hour. The Jarman well is on a location that caused much distress and litigation early in the history of the field. Humble has offset acreage and the Jarman well is on a narrow strip of land that the Humble claimed did not in fact exist. All of the completions were in the southwest part of the field and none added anything particularly of interest.

Pettus Area

In the Pettus area in Bee County the Union Producing Co.'s No. 5 Ray, 700 feet north of the Humble Oil & Refining Co.'s No. 1 McKinney, discovery oil well of the field, at 3,975 feet is flowing initially 79 bbls. of pipe line oil hourly on nine-thirty-seconds-inch choke.

There are nine tests now drilling in Bee County, all more or less associated with the Pettus area. Tidal Oil Co. is interested in the Morgan Oil Corp.'s No. 1 Ray in the J. W. Williams Survey which cored at 3,951 feet late last week. It is southwest of the Humble company's No. 1 McKinney.

New Shallow Field

Hill, Nagel & Hill completed a shallow well at 215 feet in what is probably the Charco Redondo sand in Zapata County and opened a new shallow pool. It is about 3 miles southwest of the Alworth Pool in Jim Hogg and about 8 or 9 miles northeast of the Charco Redondo Pool in Zapata. The latter has been a very remarkable pool producing from sand at around 250 feet and with wells costing only a day's effort to drill they give up a very profitable production. The Hill, Nagel & Hill well is their No. 21 Ramirez and is the result of a number of tests drilled in that area before hitting the right spot. The well perpetuates the lease holdings which were soon to expire.

The discovery of this new shallow pool in Zapata and the testing of O. W. Killam's No. 18 Bruni in Webb County were the two most important happenings of the week down that way. The Killam well is in the Cole Pool area and he has been drilling a number of tests around the town of Bruni with some measure of success in getting gas wells. His No. 18 seems to have located a new sand at 2,434 feet. The sand in the Cole oil pool at the north end of the area and in the gas wells north of that is about 100 feet shallower and the sand in the Magnolia's No. 1 Benavides in the southeast part of the field in the O'Hern-Seacord Pool is at 2,777 feet. Accounting for all elevations it looks like a new sand. On a drill stem test the Killam well looked like 60,000,000 feet of gas. It is not far from the Magnolia's No. 4 Benavides which at 3,070 feet made considerable gas and oil and has finally been abandoned at 3,214 feet.

Killam-Duggan's No. 12 Cuellar in Zapata County in the oil pool east of the Jennings gas field, came in flowing 25 bbls. an hour at 1,542 feet, the regular depth for that field, but a better well than the average.

Zavala County

Zavala County which gave birth to a gas field some months ago when J. G. Pundt drilled on the West ranch has been quiet for some time. Texas Gas & Fuel Co. last week drilled in No. 4 West in the Margarita Suniga Survey at 780 feet and got a good flow of gas. This well is somewhat to the west of the other wells and is better than the first wells drilled in the field. No. 5, completed before the No. 4, was also a better well. About 3 or 4 miles of territory is now proven to gas with four wells, stretching out in a line. The field is in the north part of the county due south of Uvalde in Uvalde County, which is being supplied with gas from the field.

Kendall County

Interest is still alive in Kendall County. The Sterling No. 1 Werner has been on the pump for several days and has been pumping sulphur water which is soon exhausted and the well then shuts down. It had originally shown some oil, considerable having been bailed before the hole was cased. Seaboard Oil & Gas Co. is rigging up for a test north of it, Dixon Oil Co. at 207 feet is fishing for a 15-inch bit and Borgett and others' No. 1 Hagg is resetting casing at 656 feet and a half dozen other blocks have been got together and some deals closed for tests. The area of interest extends from Sisterdale south nearly to Boerne and east of Kendalia and beyond, and northeast into Blanco County.

SOUTHWEST TEXAS

Branyon	22
Buchanan	33
Bruner	24,684
Dale	354
Darst Creek	16,632
Kingsville	120
Larremore	100
Luling	9,780
Lytton	867
Manford	530
McMullen County	35
Medina County	22
Mirando	8,831
Pettus	66
Somerset	1,630
Star County	25
Yoast	730
Total Southwest Texas	64,471
Week ending March 1	62,794
Increase	1,677

Darst Creek Potential Proration

New proration figures will be available on the Darst Creek Field some time probably early the coming week. Proration summaries for the field for the period March 1 to 15 giving the totals for companies follows:

Producer—	Wells	Daily Potential potential prod.	Daily Potential allowance	Daily allowance
Abercrombie	1	1,980	103	183
Empire G. & F.	3	1,728	60	220
Gulf Prod.	12	33,756	1,689	2,569
Humble	16	15,949	834	2,074
Kirby	1	549	46	126
Penn Oil Co.	1	465	41	121
Stroube & Stroube	1	360	48	118
Sun Oil Co.	4	5,402	282	602
North & South	6	12,240	640	1,120
The Texas Co.	19	25,963	1,296	2,656
Trinity Drillers	3	1,103	51	211
	67	99,495	5,090	10,000
Magnolia	11	11,536	468	1,108
Field total	78	111,031	5,558	11,108

COMPLETED WELLS

Completions in Southwest Texas, with their initial production, in the past week in review were as follows:

Darst Creek—Guadalupe County

Humble Oil & Refining Co.'s No. 5 Sallie Wilson, 800 feet south of north line, 1,000 feet west of east line, Jacob Darst Survey; total depth 2,644 feet; swabbed 100 bbls.

Sun Oil Co.'s No. 4 Knoblock, 150 feet northwest line, 460 feet northeast line, 75-acre lease; total depth 2,547 feet; completed, flowed 185 bbls. per hour.

Sun Oil Co.'s No. 5 Knoblock, 763 feet from southwest line, 150 feet southeast line, in the J. W. Robinson Survey; total depth 2,600 feet; completed, flowed 2,400 bbls.

Sun Oil Co.'s No. 3 Knoblock, 150 feet southeast line, 460 feet northeast line of 75-acre tract, in the J. R. Robinson Survey; total depth 2,594 feet; completed, flowed 2,400 bbls.

The Texas Company's No. 1-B Knoblock, 450 feet from southeast line, 450 feet southwest line of B lease, in the J. R. Robinson Survey; total depth 2,509 feet; completed, flowed 3,800 bbls.

The Texas Company's No. 1-A Knoblock, 450 feet from northeast line, 150 feet from southeast line of A lease, in the J. R. Robinson Survey; total depth 2,585 feet; completed, flowed 1,400 bbls.

The Texas Company's No. 4 H. Willie, 390 feet north line, 330 feet east line of tract, in the J. Darst Survey; total depth 2,630 feet; completed, flowed 800 bbls.

Buchanan Pool—Caldwell County

Sun Oil Co.'s No. 1 Cude, 150 feet each way out of northeast corner of 33-acre tract, in the William Spillers Survey; total depth 2,013 feet; completed, pumped 60 bbls.

Buchanan-Danciger's No. 1 W. T. Cude, in the William Spillers Survey, 150 feet each way out of southeast corner of 23-acre W. T. Cude lease; total depth 2,179 feet; completed, estimated 250 bbls.

Cole Pool—Webb County

Allied Gas Co.'s (Pure) No. 1 Bruni, 200 feet southwest line, 450 feet northwest line, Mariano Arispe grant, Survey 7, Adams (Foltz) subdivision; total depth 2,269 feet; completed; sand 2,260-63 tested 20,000,000 feet of gas, 396 pounds rock pressure; sand at 2,263-69 feet, 30,000,000 feet of gas, 700 pounds rock pressure; set 6⅝-inch casing 2,259 feet.

Kohler Pool—Duval County

Humble Oil & Refining Co.'s No. 42 Kohler, 495 feet south line, 165 feet west line, Survey 171; total depth 1,758 feet; completed, 15 bbls.

Allied Gas Co.'s No. 2 Peters, 560 feet west line, 1,980 feet north line, Survey 161; total depth 1,742 feet; com-

(Continued on Page 186)

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location—	Remarks:
Frontier Oil Co.'s No. 1 Hoffman, 2,122 ft. from E line, 1,550 ft. S line of tract in the John Sharp Sur., 3 miles SW from Somerset Field	T. D. 1,899 ft.; drlg. in limy and sandy shale.

BASTROP COUNTY

H. C. Kate et al's No. 1 C. L. Lackey, 5,150 ft. NW line, 1,500 ft. SW line of 219-ac. tract in the Joshua Gray Sur., 2 miles W from Bateman	T. D. 400 ft.; drlg. in sandy shale.
B. L. Batts et al's No. 1 A. A. Alexander, W. M. Eastland Sur., 4,190 ft. to NW line, 1,320 ft. to SW line of Sur.	T. D. 1,420 ft.; drlg. in shale.
Jim Harper's No. 1 Mitchell, 150 ft. from SE cor. Blk. 111, Bastrop Townsite	Dropped from reports.
Abernathy et al's No. 1 A. Aldridge, in the Martha Barker Sur., 2,750 ft. SE and 450 ft. NE of 241-ac. tract or 2,000 ft. SW and 4,500 ft. NW of Sur.	T. D. 2,305 ft. drlg in chalk.
Superior, Oil Co.'s No. 1 A. Lasher, D. Dykes Sur., 600 ft. to S and W lines of Sur.	T. D. 2,620 ft.; drlg. in shale.

BEE COUNTY

The Texas Company's No. 1 Lasater (core test), 980 ft. N, 20 ft. E from SW cor. of Lasater 170-ac. tract (shown as Hill tract on map), thence 2,100 ft. S, 70 ft. E Jose Maria Uranga Sur.	T. D. 810 ft.; drlg. in shale.
Morgan Oil Corp.'s No. 1 Mrs. R. A. McKinney, 350 ft. N of S line, 2,640 ft. W of E line of Mrs. R. A. McKinney tract in the Ryland C. Ballard Sur.	Spudded in.
Ed Price's No. 1 Mrs. Laura E. Weiss, 200 ft. out of NW cor. of B.&B. 640-ac. Sur., E of Normanna, 6 miles W of Blanco Creek in the B.&B. Sur.	Derrick.
Houston Oil Co.'s No. 1 J. F. Portis 288.3-ac., 1 mile SW of No. 1 McKinney, in the A. Smalley Sur.	T. D. 461 ft.; cemented surface csg.
Dr. Bozo & Cooper's No. 1 A. J. Kimbell, C 189 acres in the Stephen Winship Sur.	T. D. 410 ft.; cemented 10-in. csg.
Morgan Oil Corp.'s No. 1 Geo. A. Ray, 2 miles SW of No. 1 McKinney, NW Medio Creek, NE part Geo. Ray 936-ac. tract in the John W. Williamson Sur.	T. D. 3,350 ft; drlg. in sandy shale.
The Texas Company's No. 3 Tipps	T. D. 3,500 ft.; cored water sand; no oil show; drlg. deeper.

BEXAR COUNTY

Burton Oil Co.'s No. 1 P. H. Shook, in the Monjares Sur., 3,150 ft. to E line, 150 ft. to N line of farm, 10 miles SE from San Antonio	T. D. 1,840 ft.; drlg. in chalk.

(Continued on Page 183)

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Borger, Texas
Luling, Texas
Big Spring, Texas
Wink, Texas
Pampa, Texas
Benavides, Texas
El Dorado, Arkansas
Seal Beach, California

Tests on Five New Areas Being Started

Latest Prospect in South Central Brazoria County. Total of 16 Wildcats Drilling or to Be Drilled Immediately

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Mar. 10.—Continued development of new territory on the Gulf Coast is indicated in the fact that within the past two weeks locations have been made and rigs are going in for the first tests of five recently checked geophysical wildcat areas and salt dome prospects. These now make a total of 16 wildcat prospects on which first tests are drilling or are to be drilled immediately.

The latest prospect added to the Gulf Coast's rapidly increasing list of geophysical discoveries is in south central Brazoria County between Angleton and Danbury where Rycade Oil Corp. late in the week was making location in the H. Austin league for the first test on its block just completed centering there. The location is in the Rapid City tract. This block which Rycade has got together after geophysical checking is of particular interest because of its proximity to Shell Petroleum Corp.'s Danbury Dome prospect on which a first wildcat also is drilling, being down to 4,579 feet in water sand. Shell's Danbury block now is sandwiched between two prospective areas as Humble Oil & Refining Co. and Gulf Production Co. also have just leased up blocks a short distance north of Danbury where these companies are claimed to have checked favorable dome indications separate from Shell's Danbury discovery. Shell's test has encountered several sands showing oil, from one of which at 1,572-77 feet enough oil is swabbed to indicate that a small pumper could have been completed.

Brazoria County also is the location of another of the five new prospects to be tested for the first time, this being at Manvel in the northern part of the county. The Texas Company has completed rigging up and is ready to start drilling on its No. 1 Ewing in the Harvey N. Little Survey. This geophysical dome prospect also is of the 1930 crop, having been made known early in January.

Louisiana Prospects

On the Iowa prospect straddling the Calcasieu Parish-Jefferson Davis Parish line in Louisiana and which was checked during the first part of 1929 Shell Petroleum Corp. during the week made location for its first test, No. 1 Heyd. Another Louisiana wildcat prospect is in Acadia Parish in Section 10-8s-1w, where Calcasieu Oil Co. has just started drilling in No. 1 Hays.

In the Hannah Nash Survey of the extreme northwestern corner of Chambers County, Texas, where the recently organized Sloan Prospecting Co. got geophysical indication of another likely dome, this company two weeks ago made location for a wildcat on the Mrs. J. Ulrich farm.

First Tests

First tests in new territory in addition to those above mentioned include the following:

Gulf Production Co.'s No. 1 Brazos Valley, John Frederick Survey, Clodine prospect, Fort Bend County, drilling gumbo 4,920 feet.

Pure Oil Co.'s No. 1 Jackson Brown, Burrett & Harris Survey, Pilant Lake district, Fort Bend County, derrick.

Gulf Refining Co.'s No. 1 Armilise, Section 45-12s-13e, Napoleonville, Assumption Parish, drilling shale 5,640 feet.

Gulf Refining Co.'s No. 1 City of New Orleans, Section 19-3s-23e, Wisner, La Fourche Parish, drilling sticky shale 5,200 feet.

Vacuum Oil Co.'s No. 1 Cameron Meadows, Section 21-14s-13w, Cameron Parish, testing sand showing some oil, 1,309 feet.

Pure Oil Co.'s No. 1 Wax Lake, Section 12-17s-9e, St. Mary Parish, building derrick.

Vacuum Oil Co.'s No. 1 Zenor, Section 21-15s-11e, Patterson, St. Mary Parish, drilling sandy shale 4,181 feet.

Pure Oil Co.'s No. 1 Day, Section 1-10s-5w, Lacasine Bayou, Jefferson Davis Parish, fishing drill pipe 3,970 feet.

Humble Oil & Refining Co.'s No. 1 Cockrell-Moran and No. 1 Lake Washington, Section 2-20s-26e, Lake Grand Ecaille, Plaquemine Parish. The former is testing sandy shale at 1,738 feet and the latter is drilling hard sand at 4,304 feet.

Among recent geophysical discoveries is that of Pure Oil Co. in northern Chambers County. This company has recently checked what is believed to be a secondary dome to its Lost Lake Dome, lying just west of the original dome, and believed to be a part of the same salt mass.

Refugio Tests

There were few developments of importance in Gulf Coast fields. Refugio continued the outstanding field in number of operations and in production. Although there were only two completions for the week nine tests, two in the 5,500-foot sand and seven in the 3,700-foot horizon, were preparing to test or waiting cement to set at the close of the week. In addition to these 30 tests were making hole, not including tests standing as rigs or derricks.

At Refugio, Houston Gulf Gas Co.'s No. 1 Lambert, 2-mile extension deep wildcat, continued to hold up its steady flow. As a gauge of its potential flow it was opened for one day and made 3,000 bbls. in 24 hours. It has been flowing pinched in approximately 1,300 bbls. Union Producing Co.'s No. 1 Shelton, another deep test, continued to blow wild from a sand around 5,800 feet. Hopes of saving the well have been given up and as soon as the gas can be killed or well sands up it will be abandoned. Efforts to kill the well have been hampered by the hot salt water being sprayed.

Of chief interest at Refugio now is Union Producing Co.'s No. 1-A Rose Lambert, a deep wildcat, located between the wells in the 5,500-foot sand and Houston Gulf Gas Co.'s No. 1 Lambert, which is flowing from a total depth of 5,884 feet. Late in the week it was drilling below 5,500 feet after drilling plug at 5,245 feet.

Sheeks-Esperson Producer

In the Sheeks (Esperson) area of western Liberty County, Cranfill & Reynolds Oil Co. added another good producer in the 2,300-foot horizon. This well, No. 7 Esperson, the ninth successful well in the field, came in flowing an estimated 650 bbls. daily on a three-quarters-inch choke from a total depth of 2,326 feet.

The only other productive completions of the week were Sun Oil Co.'s No. 2 J. Wilburn, southeast side of Barbers Hill, flowing 420 bbls., 5,365 feet; Republic Production Co.'s No. 57 Dolbear, Hull, pumping 250 bbls. of fluid, 85 per cent water, 2,983 feet; Yount Lee Oil Co.'s No. 125 McFaddin, Spindletop, flowing 1,200 bbls. fluid, 25 per cent water, 2,800 feet; Gulf Production Co.'s No. 25 Stateland, Goose Creek, a small workover pumper. Yount Lee Oil Co.'s Spindletop well is 800 feet to the northeast of production around the dome on the south side. Location has been made for another wildcat 300 feet further to the northeast.

Deep Wildcats Abandoned

Three deep wildcats were among the half dozen tests abandoned. They were:

Gulf Production Co.'s No. 1 Starks, N. Block Survey, Port Neches, Orange County. This test, which failed to find any indication of a dome, is over a mile to the east of the Port Neches Field being developed successfully by The Texas Company.

The Texas Company's No. 4-A Vermillion Bay, Iberia Parish, salt 6,125 feet.

The Texas Company's No. 2 Louisiana Land & Exploration Co., Dog Lake, Terrebonne Parish, drill stem stuck 6,297 feet.

Houston Gulf Gas Co. also is quitting temporarily its No. 1 Fields, a wildcat on the northwest side of Boling Dome, Wharton County. This test lost the hole with heaving shale after going to 4,200 feet. Kirby Petroleum Co.'s No. 1 Davis, San Felipe Dome, Waller County, is being abandoned with hole cratered after blowing out at 2,941 feet.

Daily Average Production

Daily average production for the week ending March 8 continued at the peak set the preceding week with an increase of 1,418 bbls. Texas Coastal fields gained 4,331 bbls. but a drop in Coastal Louisiana, chiefly at Sulphur, offset most of the Texas increase. Figures by fields were:

GULF COAST PRODUCTION

SOUTHEAST TEXAS	
Allen	105
Barbers Hill	24,045
Batson	1,224
Big Creek	3,279
Blue Ridge	1,896
Brenham	126
Boling	1,003
Clay Creek	1,510
Damon Mound	605
DeWalt	11,951
Fannett	1,142
Goose Creek	4,878
Hankamer	92
High Island	1,033
Hull	9,262
Humble	21,835
Jasper County	25
Lost Lake	748
Markham	315
Nash	325
North Dayton	1,054
Orange	2,409
Orchard	82
Pierce Junction	10,824
Port Neches	2,899
Raccoon Bend	12,002
Refugio	38,324
Sheeks	1,031
Saratoga	1,024
Sour Lake	2,402
So. Liberty.-So. Dayton	5,039
Spindletop	17,007
West Columbia	5,985
Total Southeast Texas	185,482
Week ending March 1	181,151
Increase	4,331

SOUTH LOUISIANA	
Anse La Butte	40
Bayou Blue	62
Bayou Bouillon	35
Black Bayou	123
Edgerly	553
Jennings	1,125
Hackberry	2,550
Lake Barre	226
Lake Pelto	248
Lockport	3,093
New Iberia	5
Port Barre	2,423
Sorrento	81
Starks	421
Sulphur	4,350
Sweet Lake	20
Vinton	3,893
Welsh	205
White Castle	380
Total South Louisiana	19,833
Week ending March 1	22,746
Decrease	2,913
Total Gulf Coast	205,315
Week ending March 1	203,897
Increase	1,418

GULF COAST FIELDS AND WILDCATS

Week Ended March 8

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Production Co.'s No. 2 Barber, north side	Drlg. hard sand 6,558 ft.
Mills Bennett Production Co.'s No. 7 Barrow, north	Drlg. lime 5,373 ft.
Mills Bennett Production Co.'s No. 3 J. F. Wilburn, southeast	Drlg. shale 5,054 ft.
Mills Bennett Production Co.'s No. 3 Collier	Drlg. lime 5,056 ft.
Mills Bennett Co.'s No. 1 Gulf fee	Drlg. shale and lime 3,150 ft.
Gulf Production Co.'s No. 2-A Wilburn, southeast	Drlg. gumbo 4,563 ft.
Humphreys Corp.'s No. 1-F Barber, northwest	Total depth 3,163 ft.; cem. 10-in. casing.
Humphreys Corp.'s No. 2-C Kirby	Trying to sidetrack 451 ft.; total depth 5,361 ft.
Humphreys Corp.'s No. 1 McLean, east side	Drlg. shale 6,954 ft.
Humphreys Corp.'s No. 1 Morgan	Drlg. shale and lime 3,787 ft.
McAlbert Oil Co.'s No. 1 Higgins	Drlg. sand 3,155 ft.
Sinclair Oil & Gas Co.'s No. 3 McKinney fee	Rig.
Sinclair Oil & Gas Co.'s No. 4 Wilburn, southeast	Drlg hard sand 5,141 ft.
Sinclair Oil & Gas Co.'s No. 5 Wilburn, southeast	Drlg. shale and lime 4,507 ft.
Sun Oil Co.'s No. 4 McKinney fee	Rig.
Sun Oil Co.'s No. 4 Wilburn, southeast	Drlg. sand and shale showing oil 5,190 ft.
Sun Oil Co.'s No. 2 J. Wilburn, southeast	Comp. flowing 420 bbls. oil 5,365 ft.
Sun Oil Co.'s No. 3 J. Wilburn, southeast	Drlg. rock 5,008 ft.
Sun Oil Co.'s No. 4 J. Wilburn, southeast	Drlg. rock 4,923 ft.
Sun Oil Co.'s No. 4 Chambers, south	Drlg. sand and shale showing oil 5,375 ft.
The Texas Company's No. 1 Lawrence	Flowed boiling salt water 5,528 ft.
Unice Oil Co.'s No. 2 Feldman, east	Rigging up to pump 5,162 ft.
Yount Lee Oil Co.'s No. 11 Chambers, south	Rigging up to pump 5,550 ft.
Yount Lee Oil Co.'s No. 13 Chambers, south	Drlg. shale and lime 2,582 ft.
Yount Lee Oil Co.'s No. 3 Phillips, southeast	Drlg. shale and lime 2,957 ft.
Yount Lee Oil Co.'s No. 6 Woodward, southeast	Drlg. shale and lime 2,202 ft.
Yount Lee Oil Co.'s No. 1 Zadie Fisher, southeast	Drlg. shale 5,675 ft.

BOLING—FORT BEND AND WHARTON

Houston Gulf Gas Co.'s No. 1 Fields, northwest	Temporarily abandoned 4,500 ft.

RACCOON BEND—AUSTIN COUNTY

Humble Oil & Ref. Co.'s No. 8-B Deutrich	Drlg. sandy shale 3,256 ft.
Humble & Valley's No. 9-A Deutrich	Shut down 3,200 ft.
Humble & Valley's No. 1 Duncan, State land	Cem. casing to test 3,291 ft.
Humble & Valley's No. 6 Gotosky	Shut down 3,177 ft.
Humble & Valley's No. 3 Helmuth	Drlg. sandy lime 1,810 ft.
Humble & Valley's No. 1-B Machamehl	Shut down 3,602 ft.
Humble & Valley's No. 1-C Mitchell	Location.
Humble & Valley's No. 7 Payne	Derrick.
Humble & Valley's No. 8 Payne	Derrick.
Humble & Valley's No. 5 Saunders	Cem. surface casing 173 ft.
Humble & Valley's No. 6 Thompson	Drlg. shale and lime 2,380 ft.
Humble & Valley's No. 7 Thompson	Derrick.
Humble & Valley's No. 7 Urban	Shut down 1,165 ft.
Humble & Valley's No. 7-A Walton	Drlg. sandy shale 3,116 ft.
Humble & Valley's No. 4 Woodley	Drlg. shale 3,027 ft.
Humble & Valley's No. 6 Woodley	Derrick.
Humble & Valley's No. 7 Woodley	Derrick.
Humble & Valley's No. 8 Woodley	Derrick.

(Continued on Page 184)

Trap on still in Earlsboro plant

SEVERAL hundred Strong steam traps in the gigantic plants of one of the world's largest soap products manufacturers might recommend these famous traps for any other steam line application where highest operating efficiency is vital. But there are other individual users of Strong traps—in the oil field particularly—who buy as many Strong traps for steam, oil and gas lines of their refineries as the soap manufacturer has for efficient heating of his steam-jacketed soap stock kettles.

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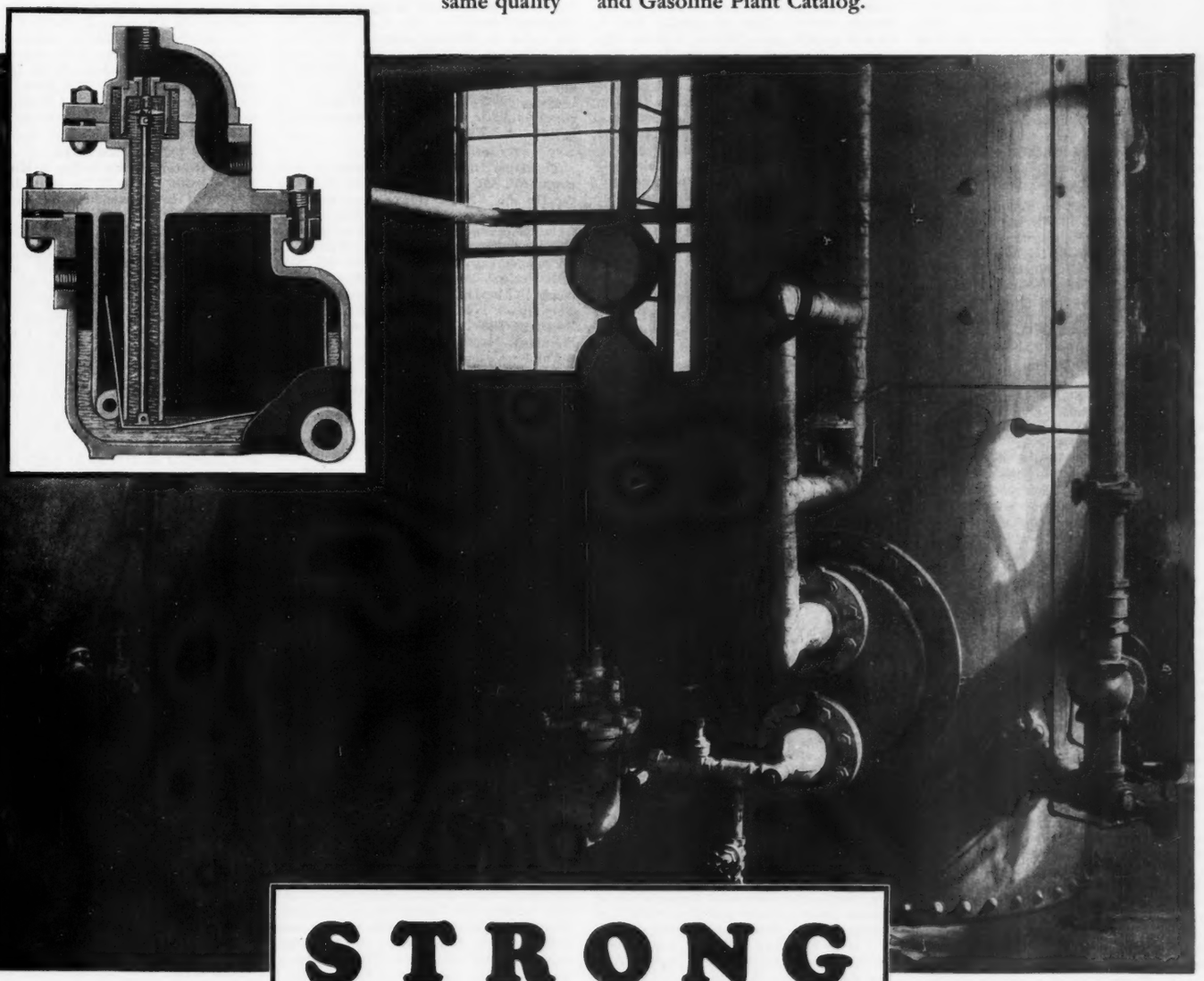

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MANUFACTURERS OF STRONG SPECIALTIES—CLEVELAND, OHIO

Find Oil in Tensleep on Mahoney Dome

Better Grade Than That in Same Sand in North Central Wyoming. New Pool in Cooper Area, Lea County, New Mexico

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Mar. 10.—The Rocky Mountain area hade more than the usual number of interesting and important developments during the week. The Texas Pacific Coal & Oil Co.'s No. 3 State, in the Cooper area, in Lea County, came in as a producer, putting 1,600 bbls. into the tank in 24 hours and proving up a new pool. The Magnolia Petroleum Co. completed a 195-bbl. well and the Humble Oil & Refining Co. a 139-bbl. well in the Jal Pool and two wells which have been showing for producers in the Lea Pool were completed. Some increase in drilling was reported in New Mexico.

The discovery of oil in the Tensleep sand in Salt Creek in Wyoming, has been followed by finding oil in that horizon on the Mahoney Dome in Carbon County in a joint test by the Producers & Refiners Corp. and the Midwest Refining Co. The oil tested 34 gravity and is a much better and different grade than that found in the Tensleep in north central Wyoming. The deep test in Salt Creek is drilling ahead slowly and stopping frequently for tests, the last making 621 bbls. natural in 24 hours. Drilling is showing an increase in Oregon Basin where several new wells are being started.

Colorado reported one dry hole in the Canon City district and a discovery of ichthyol in a well drilling near Watkins. A new area is to be wildcatted in Douglas County, south of Denver, where W. L. Christiana has blocked up a large acreage.

NEW MEXICO

Lea County, in southeastern New Mexico, scored again this week when the Texas Pacific Coal & Oil Co.'s No. 3 State, NW SW NW, Section 21-23-36, in the Cooper area, found the pay at 3,685-92 feet and 3,698-3,715 feet and flowed 1,600 bbls. of oil in 24 hours, or an average of 65 bbls. an hour. It put 1,193 bbls. into the tanks in the first 15 hours. The discovery is a reward to the company for a persistent effort to locate the high which drilling already had disclosed in that area. The well is approximately 20 miles southeast of the Lea Pool, 12 miles north of the center of Jal Pool, and south of the Hobbs Pool. Tests so far drilled in that area show the high has a northwest-southeast trend the same as most of the structures so far discovered in Lea County. No. 3 State has an altitude of 3,419 feet. It bottomed the salt at 3,188 feet and topped the brown lime at 3,243 feet. At 3,420-22 and 3,467-95 feet it had 15,000,000 feet of gas. The 6⅝-inch was cemented at 3,673 feet and the pay was found as above stated.

The Texas Pacific company drilled its No. 1 State in the SE cor. SW, Section 22-23-36, in 1928-29 to 3,995 feet where it ran into salt water. It was plugged back to 3,668 feet and completed as a 15,000,000-foot gas well. It then went 1½ miles to the northwest and drilled its No. 2 State, in the NW cor. SW, Section 21-23-36, to a total depth of 3,819 feet where it made 278 bbls. of oil and 150 bbls. of water per day. It was plugged back to 3,788 feet two weeks ago where it made 211 bbls. of oil and 165 bbls. of water in 24 hours. When No. 3 came in, this well's output jumped to 312 bbls. in 24 hours. This well probably will be plugged back further in an effort to shut off the bottom water. In the meantime the company went one-fourth of a mile to the north of No. 2 State and drilled No. 3 State with the results noted, the latter being 22 feet higher structurally than No. 2 State. The Marland Oil Co. drilled two wells in this area which furnish information as to the trend of the structure. Its No. 1 Lynn, NW cor. SE, Section 26-23-36, 3 miles to the southeast of Texas Pacific's No. 3 State, tested 45,000,000 feet of gas at 3,920 feet and was plugged back and completed as a gas well after shutting off bottom water. The Marland's No. 1 Danciger, SW cor., Section 7-23-36, 2½ miles to the northwest of the Texas Pacific well, was abandoned at 4,035 feet. Cranfill & Reynolds, who have drilled in two gas wells in the same area, farther to the south and apparently on a separate high, is drilling in its No. 1-C State, SE SW, Section 16-23-36, at 3,025 feet, the hole being bottomed in salt. This well is about half a mile to the northeast of the Texas Pacific's No. 3 State, and on the same high.

Other Lea County operations include the following:

Jal Area

The Magnolia Petroleum Co.'s No. 1-X Lindley, SE cor. NE, Section 26-25-36, an offset on the north to the Skelly Oil Co.'s No. 1 Joyner, was completed at a total depth of 3,335 feet and is flowing an average of 195 bbls. per day through a 2-inch tubing. The oil shows 3 per cent basic sediment. The oil began showing at 3,297 feet and increased at 3,312-35 feet, flowing by heads at the rate of 220 bbls. per day. The Humble Oil & Refining Co.'s No. 1 Koonce, SE cor. NE, Section 14-25-36, an offset well, also was completed with an average flow of 139 bbls. per day through the 3-inch tubing at a total depth of 3,325 feet. The Empire Gas & Fuel Co.'s No. 2 Lindley, NE cor. SE, Section 14-25-36, an offset on the south to the Humble well, is drilling at 3,222 feet in lime and probably will be the next completion. The Humble's No. 3 Lindley, NW cor. SW, Section 13-25-36, an offset to this group of producers, is a rig.

Eunice Area

The Ohio Oil Co.'s No. 1 State-McDonald, SW NW SW, Section 15-22-36, has completed rig and is about ready to commence spudding. The Continental Oil Co.'s No. 1 William Meyers, SW cor. NW, Section 28-22-36, is still sidetracking tools at a total depth of 3,750 feet, and the Empire Gas & Fuel Co.'s No. 1 Closson, NW SE, Section 6-22-36, is standing with the 6⅝-inch cemented on bottom at 3,737 feet.

Hobbs Area

The Ohio Oil Co.'s No. 1 State-Northrup, NW SE, Section 32-18-38, between the Humble's No. 1 Bowers, and the producers to the southeast, is drilling at 300 feet. It cemented the 20-inch at 98 feet and changed over to a rotary. The Shell Petroleum Corp.'s No. 1 State, SE SW NE, Section 32-18-38, an offset on the north to the Ohio's well, is building rig. The Ohio's No. 1 State, NE cor. SW, Section 30-18-38, half a mile west of the Humble's No. 1 Bowers, has completed rig and water well and is waiting for orders. Cecil Bordages' No. 1 Hughes, C S half, Section 27-19-38, is swedging the 8¼-inch at 2,800 feet.

Lovington Area

The Barnsdall Oil Corp.'s No. 1 Bronson, SE cor., Section 28-16-38, which was reported last week preparing to plug at 5,106 feet, is being sent deeper and is drilling at 5,138 feet in hard white lime.

Tatum Area

A. D. Morton and others' No. 1 State, C NW, Section 32-11-38, which was shut down last week upon completion of drilling contract, has resumed and is drilling at 4,090 feet in anhydrite.

Lea Area

Snowden & McSweeny's No. 1 State, NW cor. SW, Section 1-21-33, an edge well on the south of the Lea Pool, was completed at 3,801 feet and is pumping an average of 110 bbls. of fluid per day of which 25 per cent is water. The Continental Oil Co.'s No. 2 State, SW cor., Lot 12, Section 1-21-33, north of the Snowden & McSweeny well, was plugged back from 3,816 feet to 3,772 feet and was shot and made 220 bbls. initial. Cranfill & Reynolds' No. 1-D State, SE cor., Lot 6, Section 3-21-33, is drilling at 1,725 feet in red rock.

Southeast Area

The Rector Oil Co.'s No. 1 King, NE NE, Section 26-25-32, is shut down at 4,620 feet in brown lime for motor repairs.

Eddy County

A new location in Eddy County west of the Pecos River has been made by Hammond & Turner for their No. 1 Wilson & Gossett in Section 26-17-25, and the same firm will make another location in the same area for their No. 1 Kissinger. R. D. Compton's No. 1 State, 6 miles west of Lakewood, in the NW cor., Section 2-20-25, is drilling below 775 feet at which depth it had a third show of oil, the others being at 555 and 710 feet. F. B. Van Horn's No. 1 Santa Fe, SE SE, Section 18-19-26, 3 miles northwest of Lakewood, is drilling at 1,225 feet. In the Maljamar area, the Pueblo Oil Co.'s No. 5 Russell, SW cor. NW, Section 18-17-31, for which location was made in January, is building road. Henderson, Dexter & Blair's No. 1 Grier, SW cor. NW, Section 21-16-31, is drilling at 1,225 feet, and L. M. Lockhart and others' No. 2 Wooley, NE cor., Section 28-17-30, is shut down at 2,785 feet. It topped the brown lime at 2,705 feet. There was a show of gas at 2,370 feet. Naylor and others' No. 2 Danciger, NW cor. SW, Section 18-17-31, is swabbing 65 bbls. of oil and 2 bbls. of water per day from a total depth of 3,600 feet, and Flynn, Welch & Yates' No. 2 Stevens, NE SW, Section 13-17-30, is drilling at 1,625 feet in lime. Leonard & Levers' No. 2 State, SE cor. NW, Section 21-17-29, is drilling at 1,650 feet in shale and anhydrite. It had a show of gas at 1,175-85 feet. Henderson, Dexter & Blair's No. 1 Arnold, SE SE, Section 23-17-30, is drilling at 3,395 feet in white lime. Flynn, Welch & Yates' No. 57 State, Artesia area, NE cor. SE, Section 19-19-28, is drilling at 2,915 feet in lime. The 6⅝-inch was cemented at 2,904 feet.

San Miguel County

The Hershfield Development Co.'s No. 1 Cabra Springs ranch, NE, Section 21-12-22, is shut down for casing at 730 feet.

Chaves County

The Cactus Petroleum Co.'s No. 1 State, SE cor., Section 14-10-26, is drilling at 1,900 feet.

Torrance County

The J. B. Witt Oil & Gas Co.'s No. 1 Kutchin, Section 12-7n-7e, in the McIntosh district, is reported a location. It is on the same farm as the Sinco Oil Co.'s No. 1 Kutchin, which was abandoned at 300 feet without making a test.

Valencia County

Thomas B. Harlan and others' No. 1 Harlan Ranch, Section 5-6n-2e, is bottomed at 4,100 feet and running the 8¼-inch to 2,450 feet to shut off cavy ground. This is a rotary test to the Pennsylvanian.

San Juan County

The Southern Union Gas Co.'s No. 1-X, NE NE, Section 11-28-11, Kutz Canon district, is drilling with rotary at 1,010

DISCOVERY OF OIL IN TENSLEEP OPENS NEW CHAPTER AT SALT CREEK

By Tolbert R. Ingram

DENVER, Colo., Mar. 10.—The discovery of oil in the Tensleep sand of Pennsylvanian age in the Salt Creek Field in Wyoming marks the beginning of another chapter in the history of a field which has had a remarkable career and the end of which is not yet in sight. The romance connected with the discovery of Salt Creek, the contests which were waged over claims, the litigation in the courts, the successful termination of a remarkable struggle and the creation of many millions of dollars of new wealth is a story that has been told many times and will not be repeated here. Salt Creek has produced up to the end of 1929 a total of 217,617,365 bbls. of oil. That in itself is a record, but the field is still producing from the older horizons, now has another horizon to its credit and three more which remain to be explored.

New discoveries in deeper horizons have taken place with singular regularity as the years passed. The first drilling for oil in the vicinity was done in 1889 in what became the Shannon Pool on the north flank of the Salt Creek structure. Shipments of oil began in 1893. In 1906, shale oil was discovered in what is now known as the Salt Creek Field. The first well that produced from the Frontier (First Wall Creek sand) was completed on October 23, 1908, in the SE, Section 23-40-79. Its initial production was 200 bbls. a day at a depth of 1,000 feet. The Second Wall Creek sand was proven on August 26, 1917, on the SE, Section 11-39-79, in a well drilled by E. T. Williams to a depth of 2,270 feet after casing off water in the first sand. The first important discovery in the Third Wall Creek was made on March 11, 1924, in the C NW, Section 20-39-78, in a well drilled by the Producers & Refiners Corp. A test well to the Lakota sand in Section 35-40-79, was completed on January 5, 1925, at a depth of 2,350 feet, the well making an average of better than 3,000 bbls. a day. The exact date of the first discovery in the Sundance sand is not available, but it was only a short time after the test was drilled to the Lakota. The Sundance discovery was made at 2,828 feet and the well flowed 6,380 bbls. in 24 hours. Partial tests of this horizon, in which three productive benches were found, had been made previous to this discovery.

A year or more after the last discovery, No. 12-DT, NE SW, Section 25-40-79, was drilled as a test to still deeper horizons. It topped the Tensleep at 4,070 feet and encountered in that horizon a flow of 29,000 bbls. of water per day. It was carried down to the top of the Amsden, though not testing the last named, and finally was abandoned at 4,400 feet.

On Top of Structure

In July, 1929, the Midwest Refining Co. commenced No. 29-DT, NW, Section 35-40-79, on a lease of the Wyoming Associated, a subsidiary of the Mountain Producers Corp., to test all formations down to the granite regardless of what

(Continued on Page 191)

feet and is due to reach a gas sand in the Picture Cliff at around 1,900 feet.

WYOMING

A discovery of more than ordinary interest and which may have a very widespread effect on future drilling operations in southern Wyoming, has been made in the Producers & Refiners Corp.'s No. 2, SE NW, Section 34-26-88, on the Mahoney Dome, in Carbon County. The well is a joint operation with the Midwest Refining Co. The Tensleep formation was topped at 4,600 feet and after setting the 6¼-inch at 4,585 feet, it was drilled to 4,645 feet where it had 800 feet of oil standing in the hole. A test of the oil made by the Midwest showed a gravity of 34 degrees. While its gasoline content has not been determined, it is understood the oil is light and of a different grade from that found in the same formation in Salt Creek and the Big Horn Basin. A later report says the well has been deepened to 4,662 feet, but with what results has not been stated.

The Mahoney Dome has produced large quantities of gas from the Dakota and Sundance sands for several years, but deeper horizons have not been tested previous to the drilling of this well. It was started last July with the intentions of making a deep test. The upper horizons were mudded off or cased off as drilling proceeded. At 4,328 feet the hole was standardized and the 8¼-inch cemented at 4,319 feet. It was supposed to be on top of the Embar at that depth and a show of oil was reported. Very few tests below the Sundance have been drilled in southern and southwestern Wyoming and should a new producing horizon be opened up, it may change the complexion of the oil map in that area as there are numerous structures which have shown oil and gas production in the Dakotas and upper horizons. These extend as far to the northwest as the Big Sand Draw, Muskrat, Pilot Butte and other gas structures.

This discovery is significant when taken into consideration with a well drilled by the Producers & Refiners Corp. in 1928 on the NW cor. SE, Section 25-26-87, on the Ferris Dome, a few miles to the east of Mahoney Dome. At 4,525 feet, this well was 2 feet in the Tensleep and flowed 25 bbls. per hour initial, the oil being light green in color and testing 37.5 gravity. It was carried on down to 4,600 feet where it ran into sulphur water and was plugged back to 4,535 feet and completed as a 125-bbl. well.

Salt Creek

The Midwest Refining Co.'s No. 29-DT, NW, Section 35-40-79, the test to the granite in Salt Creek on acreage of the Wyoming Associated Oil Co., is shut down at 3,805 feet for a test of production. This well, which opened a new producing horizon in the Tensleep formation, will feel its way cautiously through the pay, which is estimated to be 200 feet thick, and will stop for frequent tests. It topped the Tensleep at 3,780 feet and entered the pay at 3,790 feet. It stopped at 3,795 feet for a test and swabbed 472 bbls. in 12 hours. It was then deepened to 3,801 feet where it stopped for another test and flowed 621 bbls. natural in 24 hours. It was then deepened 4 feet where another test is under way.

Park County

The Oregon Basin Field in Park County is showing an increase in activity due, in part, to the building of the new refinery of the Laurel Oil & Refining Co. at Laurel, Mont., which will be ready for operation about April 1. This plant will run crude oil from Oregon Basin, part of which will come from the wells of the Lenco Petroleum Co. The oil will be transported by the Illinois Pipe Line Co. through its line to Cody and then will go by rail over the Chicago, Burlington & Quincy to Laurel. The Lenco company is starting two new operations. Its No. 2 Rousseau, NW SE NW, Section 33-51-100, is spudding below 40 feet. It is 660 feet south of No. 1 Rousseau, completed in 1928 as a 300-bbl. well. The same company is building rig for its No. 3 Rousseau, SW SE NW, Section 33-51-100, 660 feet south of No. 2. The Texas Production Co.'s No. 2 Sonners, C NE NW, Section 29-51-100, an offset on the west to the Lenco's No. 1 Morris, is building rig. Charles E. Orchard's No. 1 Owens, SE cor., Section 29-52-100, which has been standing cemented at 3,260 feet on account of the cold weather, is setting tanks and preparing to drill in. His No. 7 Rue, SW cor. NW, Section 28-51-100, which is standing cemented on top of the Embar at 3,540 feet, will start drilling in as soon as the ground thaws so the tanks can be set up. The Y-Tex Oil Co.'s No. 1 State, SE SW, Section 16-51-100, is drilling at 280 feet, and the Wyoming Western Oil Co.'s No. 3 Hough, SE cor., Section 18-51-100, is drilling at 4,556 feet. The Oneida Oil Co.'s No. 1 Beck, SW cor., Section 28-52-100, cemented the 10-inch at 2,250 feet.

The Cody Petroleum Co.'s No. 1-B Klindt, NE cor. SW, Section 6-51-100, is drilling at 2,260 feet. This company's No. 2 Klindt, SE NE NW, Section 7-51-100, which came in as an 800-bbl. well in the Embar at 3,495 feet in the summer of 1928, is being plugged back to that horizon. This well was reported to have been deepened through the Tensleep and into the Amsden at a total depth of 4,188 feet. It found water in the bottom of the Embar and in the Tensleep and topped the Amsden at 4,165 feet. It showed some oil at the top and then went into water. This well is the deepest structurally so far drilled on the structure as far as known. It is in the saddle between the north and south domes and the results indicate oil most likely will be found in the Amsden high up on the structure and probably big production in the Madison when they are tested. Outside of Oregon Basin, the Ohio Oil Co.'s No. 1 Burlington, SE SW, Section 21-53-101, Shoshone Dome, is drilling at 4,438 feet and appears to have overcome the difficulties which have delayed its completion. The Midwest Refining Co.'s No. 31 Rosenberg, SW cor. NE, Section 25-58-98, Frannie Dome, is drilling at 1,375 feet in gray shale. The Resolute Oil Co.'s No. 1 Badger Basin, SW NE, Section 17-57-101, is preparing to resume at 4,280 feet.

Big Horn County

The Ohio Oil Co.'s No. 1 Union Gas, NE cor., Section 22-56-97, Byron Dome, cemented the 5⅜-inch at 4,612 feet to protect the hole from cavy ground.

Hot Springs County

The Ohio Oil Co.'s No. 1 Smith, SE NE, Section 9-46-99, Walker Dome, is drilling at 3,134 feet.

Weston County

The Osage Trust Co.'s well on the NE SE, Section 14-46-64, western side of the Osage Field, which created considerable interest two weeks ago when it flowed 800 bbls. in 20 hours, has been connected with the Illinois Pipe Line Co.'s line and is flowing an average of 400 bbls. a day through the 2-inch tubnig. This well has been a big surprise. A peculiar feature was that a well on Section 13, offset acreage, flowed considerable oil for a while after the big producer came in.

Converse County

The Pioneer Oil Co.'s No. 1 Irvine, SW NE, Section 5-31-70, is drilling at 3,270 feet after cementing iron in the hole. Total depth is 3,650 feet. This well reached 3,650 feet two years ago and was reported to have had a show of oil in the Lakota at 3,400 feet, but no test could be made on account of the tools being lost. Recently the new interests took the operation over from the Great Northern Oil Co.

Fremont County

The Producers & Refiners Corp. is starting a new well in Big Sand Draw in its No. 10, Section 14-32-95, which is running cement for cellar. The Kinney-Coastal Oil Co.'s No. 1 Dykeman, SE SW, Section 22-3n-1w, Pilot Butte, is bottomed at 3,440 feet in black shale. The 8¼-inch was cemented at 3,390 feet with 140 sacks to shut off a big flow of gas in the Muddy so that lower horizons may be tested. It is estimated it has 150 feet to go to reach the Dakota. Plans are to carry it down through the Lakota, Morrison and Sundance. The Texas Production Co.'s No. 1 State, SW SW, Section 36-34-95, Alkali Butte, is drilling at 2,930 feet and carrying the 10-inch. It probably is through the Frontier which is about 800 feet thick in that district.

Sweetwater County

The Mountain Fuel Supply Co.'s No. 1 Sullivan, SW SW, Section 10-16-104, South Baxter Basin, is bottomed at 3,430 feet and straightening crooked hole at 3,360 feet. Same company's No. 1 Union Pacific, Section 11-17-104, is bottomed at 2,563 feet and fishing for tools at 2,419 feet. The Tower Petroleum Co.'s No. 1, SW SE, Section 31-15-103, is preparing to resume at 4,660 feet, and the Vermillion Oil Co.'s No. 1, SW cor., Section 16-12-99, Hiawatha Dome, is drilling at 1,700 feet and carrying the 10-inch after cementing the 13-inch at 1,600 feet. The Prairie Oil & Gas Co.'s No. 75-A, Section 11-26-90, Little Lost Soldier, is drilling at 2,150 feet in hard sand.

Uinta County

The California Co.'s No. 1 Union Pacific, NE NW, Section 7-17-116, Muddy Creek, is cementing casing on bottom at 4,635 feet.

COLORADO

Colorado had one completion, a dry hole, in the Continental Oil Co.'s No. 4 Melvina Steimier, SW SW, Section 35-18-70, in the Canon City district in Fremont County, which was abandoned at 2,400 feet. This well was near the discovery which opened the Canon City, or West Florence Pool several years ago.

A test is to be drilled in a comparatively new area in Colorado in the Perry Park district in Douglas County, south of Denver. W. L. Christiana, who was chief geologist for the Continental Oil Co. prior to the merger with the Marland Oil Co., has leased approximately 30 sections in that district and will start a well before August 1. Christiana did all of the geological work and took the leases in his own name but, it is understood, it has not yet been decided whether he will drill it himself or make a deal with one of the major companies. Several companies are reported to be favorably impressed and ready to make a deal. The Perry Park ranch, the Nickson ranch and the Dakan ranch are included in the acreage under lease. It is expected to be a shale and Dakota test and will go below 3,000 feet. While the Perry Park district is well known on account of its peculiar geological formations and some leasing has taken place in the past, no thorough exploration of the area has been made with the drill. A well was drilled in 1926 by the Region Oil Co. (A. A. Rollestone) on Section 15-9s-68, and was abandoned at 3,400 feet, but little information was given to the public on the operation. It was understood that Mr. Rollestone had worked out some theory of his own concerning the possibilities of oil accumulation and that the well was put down to test it. So secretive was he in regard to the operation that the well was almost completed before anybody outside of those immediately concerned knew it was being drilled.

Adams County

Rumors of a small discovery having been made near Watkins, in Adams County, east of Denver, which have been current for several weeks, failed to attract much attention as several wells in that district are doing some financing, but this week the origin of these reports apparently was traced to Nettie M. Slatt's No. 1 Hills, SE cor., Section 27-3s-64. This operation, sometimes known as the Hills Dome Lease Co. commenced spudding last spring in a 24-inch hole for a 5,000-foot test. It is bottomed at 1,050 feet and carrying the 12½-inch which is to be set as soon as a suitable formation is found. Sixteen water sands were encountered from the surface down to 950 feet, but none since then though water has not yet been cased off. At 1,010 feet, according to representatives of the company, a black substance of about the consistency of mush, began appearing on the top of the water, smearing up the cable and coming out in the bailer in

(Continued on Page 166)

MOVEMENT TO CURTAIL PRODUCTION IN MT. PLEASANT, MICHIGAN, FIELD

By Special Correspondent

MUSKEGON, Mich., Mar. 10.—A campaign to curtail production in the Mount Pleasant oil field by shutting down drilling wells except direct offsets to producers has been started by the Pure Oil Co., according to word received here. The Pure company is storing about half the daily production of the field, or about 4,000 bbls., at its storage tank farm in Section 17, Greendale Township, Midland County. It owns about 75 per cent of the production and fully 85 per cent of the proven acreage. It also operates the only crude oil gathering system in the central Michigan field. Crude will be stored in four 55,000-bbl. tanks at the Pure tank farm. It also is reported the company will build about two additional storage tanks a month of the same capacity until it becomes unnecessary to store any more crude. It has been intimated that another price cut below the present posted price of $1.25 may be necessary if production is not curtailed.

With about 175 rigs in the State and more than 100 of them drilling on March 1, only two small producers, one in the Mount Pleasant Field and one in Monroe County, were reported completed.

The Monroe County wildcat possibly would be called the more important due to its location. It is William J. Norris, trustee's No. 1 LaPointe & Dusseau, NE NW Section 19-6s-6e, Dundee Township, near the town of Dundee. It topped the Trenton limestone at 2,125 feet, had the pay sands at 2,202 feet and was drilled to a total depth of 2,253 feet. It was shot with 220 quarts and was expected to make a small pumper although accurate reports as to its initial production were not available. The Dundee outcrops in this neighborhood near the southeast corner of the State of Michigan and near the Ohio-Michigan line.

The Pure Oil Co.'s No. 1 Owsley, in the Mount Pleasant Field, topped the Dundee limestone at 3,512 feet, had the pay sands at 3,540 feet and at a total depth of 3,567 feet swabbed 32 bbls. in 24 hours as a very small producer.

Muskegon Field

The Dixie Oil Co. is deepening its No. 2-D Kate McLaughlin, SW SW Section 12-10-17, Laketon Township, to see if it may produce more in the Dundee streak about 50 feet below the original Dundee pay which failed to make much production.

A permit for one new location in the Muskegon, one in the Mount Pleasant Field and one on a wildcat location near the Mount Pleasant Field were issued. The new Muskegon well is the Lima Oil Corp.'s No. 7 L. P. Haight, NW SW SW Section 9-10-16, Muskegon Township. The new Mount Pleasant well will be the Dixie Oil Co.'s No. 4 N. Davis, NW NE SW Section 2-14n-3w, Chippewa Township, Isabella County. The new wildcat is Gibson, Johnson & Borden, Inc.'s No. 1 Lucius Cole, NW NE SW Section 19-15n-3w, Denver Township, one township north of Chippewa and the heart of the proven field.

Interest Shifts

With the curtailment of drilling activity in Mount Pleasant, operators are shifting attention to wildcat areas between the field and the Clare County gasser and in the vicinity of the recent new Broomfield Township gasser in the Marshall formation. A number of operators are reported considering new wells in these areas.

The Clare Development Syndicate's No. 1 Mary Hubel well, SW SW Section 27-17n-4w, Grant Township, Clare County, near the village of Clare, is drilling at about 1,200 feet and may soon drill into the Marshall formation at about 1,400 to 1,500 feet. It was at 1,415 feet the first Clare wildcat struck a good flow of gas in the Marshall.

California Curtailment Still in Doubt

Minority Group at Long Beach and Santa Fe Springs Prevents Fields From Reaching Their Objective Production

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Mar. 10.—Daily production in California registered a substantial decline during the current week due to curtailment work and a further reflection of curtailment is anticipated during the next 10 days. The outcome of California's new curtailment program, which contemplates the reduction of State production to approximately 609,000 bbls. per day, is still in doubt notwithstanding that the proposed curtailment plan has been ratified and instructions issued to undertake immediate curtailment. A minority group of operators at Long Beach and Santa Fe Springs has prevented these fields from reaching their objective and Umpires Anderson and Grimm are making a determined effort to convince these operators of the futility of continuing to produce in excess of their allotted maximum.

Considerable difficulty is being experienced in whipping field production into line at both Long Beach and Santa Fe Springs and the outcome of work in these two fields may determine the future status of curtailment work in California. Production at Long Beach has been averaging approximately 108,000 bbls. per day all week, or more than 18,000 bbls. per day in excess of its maximum allowable production. If operators are working on the assumption that they can get away with this condition indefinitely, they are mistaken. Production at Santa Fe Springs is approximately 157,000 bbls. per day. The excess production over the allowable maximum in each of these fields can be charged up against a relatively small number of operators, some of whom have consistently refused to join in either the present curtailment program or other similar attempts in the past. It is regrettable that this small minority is able to jeopardize the present curtailment program, and, while every attempt will be made to carry out the existing curtailment program, its success is not assured by any means.

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Ttotal this week	Daily average	Total last week	Daily average	This year to date	same time last year
Crude oil	.....	.....	.....	.....	77,405	110,550
Fuel oil	.....	.....	.....	.....	71,950	.....
Diesel and gas oil	72,761	10,394	153,418	21,917	702,076	389,566
Gasoline	347,863	79,695	351,229	50,176	3,153,322	3,368,087
Coastwise—						
Crude oil	536,800	76,686	117,909	16,844	2,796,950	4,923,644
Fuel oil	226,002	32,286	299,588	42,798	2,853,841	3,500,830
Diesel and gas oil	8,864	1,266	109,356	15,622	346,349	125,392
Gasoline	333,741	47,677	30,585	4,369	1,874,629	2,050,494
Kerosene	3,302	472	6,919	988	17,345	2,338
Exports—						
Crude oil	96,434	13,776	64,879	9,268	1,201,706	683,886
Fuel oil	372,328	53,190	223,420	31,917	2,736,585	3,098,162
Diesel and gas oil	173,287	24,755	217,948	31,135	1,052,109	397,413
Gasoline	373,742	53,392	165,421	23,632	2,663,205	1,645,579
Kerosene	24,815	3,545	87,866	12,552	436,044	477,976
Lubricants	.....	.....	.....	.....	5,057	.....

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	88,280	.....
Gasoline	.....	.....	152,895	21,842	285,245	501,170
Coastwise—						
Fuel oil	44,784	6,398	8,120	1,160	539,268	624,580
Diesel and gas oil	8,920	1,274	.....	.....	53,466	27,989
Gasoline	16,172	2,310	80,120	11,446	765,735	606,092
Kerosene	.....	.....	30,780	4,397	91,774	11,738
Exports—						
Crude oil	.....	.....	.....	.....	3,075	71,453
Fuel oil	.....	.....	.....	.....	122,143	96,351
Diesel and gas oil	.....	.....	1,890	270	124,540	62,815
Gasoline	106,632	15,233	33,640	4,806	690,185	737,106
Kerosene	.....	.....	.....	.....	133,749	69,458
Lubricants	.....	.....	.....	.....	.....	13,693

San Joaquin Valley

Curtailment work in the San Joaquin Valley has been more successful than similar efforts in other parts of the State. Mount Poso, with an allowable daily production of 10,032 bbls. per day, is actually producing less than 9,000 bbls. every 24 hours. The Kern front, with an allowable of 12,882 bbls., made a little better than 11,000 bbls. yesterday. The Maricopa Flats section of the Midway-Sunset Field of Kern County, which the fact-finding committee was afraid might cause a little difficulty in effecting a stabilized output, is within 500 bbls. per day of its allowable production. This section of the field is characterized by a heaving sand which disrupts production periods because of the necessity of performing frequent cleanout jobs. Production in the Elwood Field of Santa Barbara County has been reduced to its allowable of 36,810 bbls. per day and operators in this field should not have any difficulty in keeping future production around this figure. Ventura Avenue has been reduced to 44,000 bbls. per day, within 2,000 bbls. of its maximum allowable production of 42,277 bbls. Satisfactory progress has also been made in a number of other fields, and, while the outlook is generally favorable, the entire curtailment program might ultimately be voided if independent producers refuse to reduce production.

Santa Fe Springs

Completions at Santa Fe Springs during the week continued to register abnormally small production. The Standard Oil Co.'s No. 22 Walker, for instance, a new well finished in the Clarke zone at 7,810 feet, was only good for 135 bbls. per day on a compressor, the oil testing 30.1 degrees and showing a cut of 4 per cent. The Texas Company's No. 8 Weaver was another relatively small well, although this new producer has subsequently built up to 375 bbls. daily. This well, which was bottomed at 7,930 feet, was finished with a 5-inch liner carrying 456 feet of perforated. George F. Getty recompleted No. 22 Monte at 8,025 feet and this former upper zone producer was returned to production flowing 692 bbls. of 32.6 gravity oil daily. No. 18, on the other hand, failed to result in commercial production on a production test at 7,950 feet as the output, 30 bbls. daily, is cutting in excess of 50 per cent.

The Bandini Petroleum, a subsidiary of the Wilshire Oil Co., was one of the few operators at Santa Fe Springs to finish a well doing in excess of 1,000 bbls. per day. This company's No. 15 Off, a former upper zone producer, was recompleted flowing 1,305 bbls. of clean 33.4 gravity oil daily from the Clarke zone at 8,014 feet, the hole having been finished with a 3-inch liner carrying 576 feet of perforated. This company has two other wells in the oil sand at present. The General Petroleum, with eight potential producers in the oil sand, successfully completed No. 137-E Santa Fe doing 240 bbls. initially from the O'Connell zone at 6,900 feet, the hole having been finished with a 6⅝-inch oil string carrying 624 feet of perforated. No. 213 Santa Fe failed to result in commercial production after being plugged back from 8,740 feet to 7,707 feet and will require additional work. No. 239 Santa Fe registered above the average initial output of new completions for the week as it came in under a natural flow doing 1,440 bbls. of clean 32.9 gravity oil from 6,200 feet.

The Union Oil Co. completed No. 14 Howard in the Meyer zone early in the week rather than continue drilling down to the Clarke horizon. It is interesting to note that No. 14 Howard, the Union's new well, showed 527 bbls. initially from 4,682 feet, whereas many current completions in the Clarke zone around 8,000 feet were below 300 bbls. per day. The Universal Consolidated recompleted No. 8 Blanchard in the Clarke zone a few days ago and this former upper zone producer was returned to production doing 470 bbls. per day from 7,985 feet. York & Lockhart's No. 3 McKeon, a new well, was completed for an initial of 260 bbls. daily from 7,900 feet. There are quite a number of incompleted drilling projects rotating in the oil sand at Santa Fe Springs which should be completed within 21 days. The small initial daily production registered by completions in the Clarke zone at Santa Fe Springs during the past month indicates the probability that very few wells scheduled for completion in the future will ever pay out unless a new deeper zone is subsequently discovered.

Midway-Sunset

A check of drilling operations under way in the Midway-Sunset Field indicates the probable completion of additional new wells during the course of the next several weeks. Most of these projected completions are out in the Maricopa Flats, which has been undergoing development for a year. Operators interested in this section recently assured the general curtailment committee they would reduce production in the Maricopa Flats to the maximum allowable production established even if they had to kill producing wells every other week. These operators also announced their intention of arbitrarily reducing future drilling operations in the interest of conservation. This unsolicited concession is worthy of mention as it forms a sharp contrast with the attitude assumed by a number of smaller operators at Long Beach, Santa Fe Springs and other areas.

The Barnsdall's No. 2-A Hazelton, a new well located out in the Maricopa Flats, is being cleaned out preparatory to being returned to production in the near future. This project recently came in flowing at the rate of approximately 1,500 bbls. per day but subsequently sanded up. The North American Consolidated should complete two new wells on the Kerckhoff lease in the Maricopa Flats within a few weeks as drilling operations have been completed on both Nos. 4 and 6. The Wellington Oil Co., Standard, California Western and the Hancock Oil Co. should also finish new wells. Wells in that section of Maricopa Flats undergoing development have a tendency to sand up following completion

BIG PRODUCTION IN DEEP LIME IN SOUTH TURNER VALLEY WELL

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Mar. 8.—In the South Turner Valley Field, Lowery Petroleums' No. 1 NW. Section 17-19-2w5, has been brought into big production 366 feet in the deep lime at 5,473 feet. Unofficial estimates place the wet gas production at 30,000,000 feet a day, indicating a crude naphtha recovery on a par with the Home Oil Co. producers. The flow will be turned into the separators as soon as the well clears itself of rock fragments. Drilling operations were handled by Imperial Oil, Ltd., under the direction of J. H. McLeod, Imperial Oil, Ltd., reimbursing itself for cost plus 10 per cent of the first production, further production being divided between Imperial Oil, Ltd., and Lowery Petroleums, Ltd. Lowery's No. 1 is some distance south of the Home producers, and is the first test in South Turner Valley outside Section 20-19-2w5, to get production in the deep lime. The big producing horizon here was about twice the depth in the lime that it was found in the Home wells. The strike marks a considerable southerly extension of the producing area.

On the other hand, Sterling Pacific Oil Co.'s No. 1, LSD 15, Section 33-18-2w5, the southernmost test of the Imperial group, which got the lime some time ago at 5,153 feet, has discontinued drilling at 6,525 feet, after encountering shale. The limestone will be shot with 700 quarts. The acreage is owned by Sterling Pacific Oil Co. and drilling has been handled by Imperial Oil, Ltd. The following is the official statement of Imperial Oil, Ltd.:

"Sterling Pacific's No. 1 drilled through a fault at 6,436 feet, after drilling 1,282 feet in the Madison limestone. Drilling has been suspended at a depth of 6,525 feet, and it has been decided by Imperial Oil, Ltd., and the directors of Sterling Pacific to shoot the limestone with 700 quarts of nitroglycerin. This will be done within the next few days."

Shale Intrusion Surprise

The shale intrusion came as a surprise, it having been planned, with the hole in good shape, to carry the deep test from the Madison into the Devonian limestone. Some geologists claim the intrusion represents the Banff shales, which occasionally occur in a thin band between the two limestones; but the official view apparently is that the intrusion represents a recurrence of the Belly River shales. In the central field, McLeod Oil Co.'s No. 4, geologically the deepest test yet drilled, was still in lime formation more than 1,450 feet below the top of the Madison, so that conditions in the extreme south are decidedly different from those in the central section. Sterling Pacific's No. 1 was the farthest south test

(Continued on Page 187)

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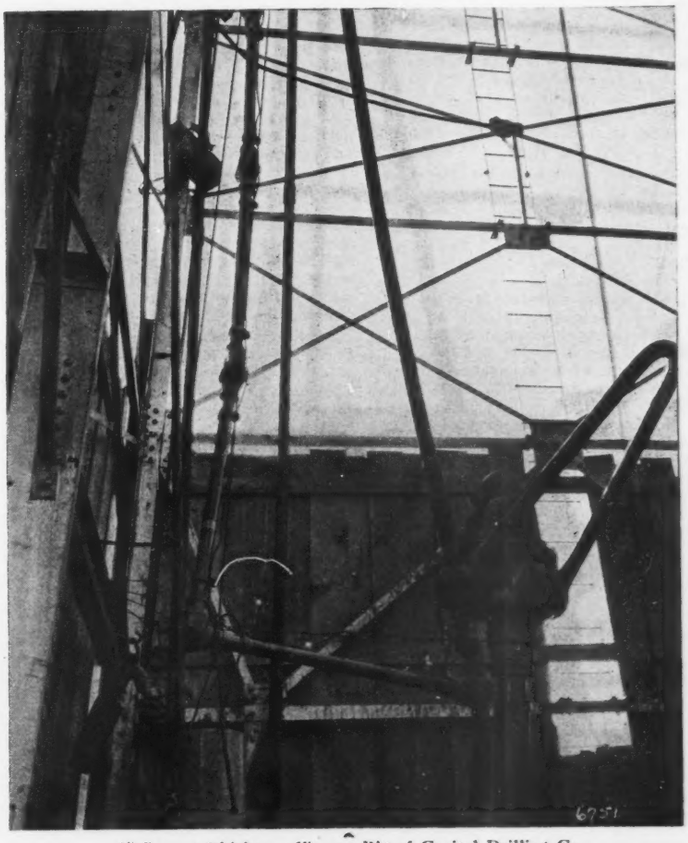
The STRONG Steel Hose is scientifically designed for the purpose for which it is used—(it is not merely an enlargement of the well-known flexible elbow joint). It has no elbows -- but hangs straight naturally, by gravity—as flexible as a watch chain, and cannot be pulled apart.

The joints have 70% greater capacity than the pipe sections, thus correspondingly reducing the fluid velocity through the joints, which, together with the novel arrangement of the fluid flow reduce sand cutting to a minimum.



3" Size at Oklahoma City on Rig of Capitol Drilling Co.

OSCAR R HOWARD
OIL PRODUCER
516 FREMONT PLACE
LOS ANGELES, CALIFORNIA

January 7, 1930.

Strong Oil Tool Co.,
629 Santa Fe Avenue,
Los Angeles, California.

Gentlemen;

We have finished our deep well, Hathaway #7, at a depth of 9350 ft. and I want to tell you about the performance of your steel rotary hose which we purchased from you last September, subject to trial. The hose has proven satisfactory in every way and you are at liberty to bill us for same.

We installed your steel hose at about 8000 ft. and finished the well with it. During all this time we were running the pumps compounded and developing considerable pressures. The average operating pressure until we reached 9000 ft. was between 1200 and 1400 lbs., after that, from 9000 ft. on, the pressures ran between 1600 and 1800 lbs.. No leaks or trouble of any kind occurred, and the hose was as flexible as could be at all times.

We had one very satisfactory experience with it; at 9260 ft.the drill pipe froze; we pumped crude oil into the mud and ran up a pressure of over 2300 lbs.,(all the pumps would stand),before we succeeded in getting it down, and freeing the pipe. The hose stood up perfectly.

Again at 9325 ft. we plugged a bit and ran up a pressure of 2300 lbs. and blew up a rubber off the piston in one of the pumps, but the hose held.

Under the circumstances I can unhesitateingly recommend your hose, for it certainly saved us,what might have turned out to be,a costly fishing job

Yours very truly,

M. L. Borough
Supt.

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due to the large amount of sand produced during the early stages of production. Several projects have required three months to get under way, the wells being on production one week and off the next due to sand trouble.

Deep Tests

With the exception of the Belridge Oil Co.'s No. 15 at North Belridge, none of the several deep tests drilled in proven fields of the San Joaquin Basin during the past several months has shown any evidence of resulting in commercial production and the outlook is not any too favorable at present. The Shell has given up the attempt to develop commercial production in No. 1-A Perris at Midway-Sunset in Section 15-32-23 after carrying the hole down to 8,195 feet and work has already been started on plugging back. The Standard is not going to call it quits with No. 1 Mascot, in Section 26-32-23, as the bit is still going ahead in a hard brown shale at 9,128 feet. Both holes were started as a result of successful extension work by the Union Oil Co. when it proved commercial production on its Western Petroleum property in Section 27-32-23. Neither No. 1-A Perris or No. 1 Mascot was scheduled to be carried down to their present depth when drilling was started as both the Shell and Standard had expected to pick up the Western Petroleum sand above the 5,000-foot level. It was logical to continue drilling operations on both wells following the failure to secure production at the anticipated level as it was advantageous to make conclusive tests before quitclaiming their interests in the two properties. The Standard's No. 1 Mascot, notwithstanding the bit is already down 9,128 feet, is not yet entirely out of the picture as the predominating formation is still recorded on the well log as brown shale.

Elk Hills

Deep exploration work has also been successful up to the present in the Elk Hills Field of Kern County and with the recent abandonment of the Standard's No. 27 Kern County Land, in Section 21-30-25, deep drilling in this field will probably be suspended indefinitely. The deep well was carried down to 8,404 feet and subsequently plugged back to 2,940 feet. The rotary equipment used in the drilling of this deep test is being torn down preparatory to abandonment. Similar work of the Standard in the Wheeler Ridge Field, in the extreme southern part of the San Joaquin Basin, has not yet been completed. The deep test under way in this field is No. 36 Kern County Land, in Section 28-11-20. At last reports this well had reached 7,110 feet without encountering any commercial possibilities below the present known production levels.

The failure of these deep projects to result in discoveries of additional productive horizons does not necessarily mean that the areas are definitely removed as future possibilities. Comparatively little is known of the future possibilities of the Midway-Sunset Field. This field, approximately 35,000 acres, consists of several major and minor independent productive areas, most of which remain untested so far as possible deep zones are concerned. It is likely that additional deep zone exploration work will be conducted from time to time. The irregularity of subsurface conditions and the development of production in lenticular sands has retarded exploration work in Midway-Sunset Field to a large extent. This is especially true of several areas where production has been developed in the Maricopa brown shale as distinguished from other sections where production is secured from a normal oil sand. Present production in the area now undergoing development out in the Maricopa Flats and oil from the Republic area centering around Section 7-32-23 and being developed by the Republic Petroleum and Chanslor-Canfield Midway Oil Co., is coming from a normal oil sand, in contrast with the production developed several years ago in the Maricopa brown shale by the Obispo Oil Co. in Section 32-12-23.

Round Mountain

The Shell Oil Corp. successfully completed No. 9 on Jewett Lease No. 2 in the Round Mountain Field of Kern County early in the week and registered an initial daily production of 140 bbls. of 19.6 gravity oil from 1,690 feet, the hole having been finished with a 6¼-inch oil string carrying 173 feet of 60 and 80-mesh screen. The Shell recently spudded in two new wells in this field and will probably continue a conservative development campaign notwithstanding curtailment under way. The Round Mountain Field has been more or less sidetracked since its discovery due to the desires of the Shell and Honolulu Consolidated to retard development until conditions improve.

Drilling operations in the Mount Poso Field of Kern County are more or less at a standstill in sympathy with crude curtailment and it is likely development work will be restricted indefinitely. The Superior Oil Co. is making preparations to start a new well on the Sheel property at Fruitvale in Section 28-29-27 and actual spud is scheduled to be made late next week. The General Petroleum is also making preparations to start a new well in the Fruitvale Field as material is on ground for No. 4 Shearer. The Shell is running three strings of tools in this field at present, having spudded in No. 1 Moore, in Section 21-29-27. The Belridge Oil Co. is putting the finishing touches on a new steel derrick which replaces the old wooden rig which towered over its well No. 15, in Section 26-27-20, and final preparations are being completed to test out the deep zone possibility in the North Belridge Field in Section 26-27-20. The Union has spudded in No. 5 Gibson, in Section 36-27-20, and has staked a location for No. 6 on the same property. The Continental will probably start drilling operations on No. 1 Result some time within a few days as this project is just about completely rigged up.

To keep a closer check on production and curtailment activities in the San Joaquin Valley, Umpire Paul Grimm has opened an office in the Padre Hotel at Bakersfield and W. R. Wardner has been placed in charge of that sector. In conformity with the existing curtailment program, Maricopa Flats, Round Mountain, Kern River Front and Mount Poso will be permitted to produce 11,862 bbls., 3,306 bbls., 12,897 bbls. and 10,032 bbls. per day, respectively. The projected curtailment in each of these fields is 43 per cent of the established potentials. These four fields have a present potential daily production of 71,789 bbls. and with a 43 per cent curtailment have a daily allowable of 41,390 bbls.

Kern Front Field

The Kern Front Field has a daily potential of 22,626 bbls. and its current allowable is 12,897 bbls. The Associated Oil Co.'s allowable is 624 bbls. daily; Bishop Corp., 570 bbls.; California Star, 114 bbls.; Carrec Oil, 14 bbls.; Chanslor-Canfield Midway Oil Co., 1,881 bbls.; General Petroleum, 2,445 bbls.; Getty, 1,436 bbls.; Italo, 68 bbls.; Pacific Western, 1,169 bbls.; Richfield, 640 bbls.; St. Helens, 322 bbls.; Standard, 1,489 bbls.; The Texas Company, 1,425 bbls., and Union Oil Co., 100 bbls. Maricopa Flats has a daily potential of 20,810 bbls. and current allowable of 11,862 bbls. The allowable of the Barnsdall is 1,425 bbls.; Birch-Royer, 314 bbls.; California Western, 371 bbls.; Doyle Petroleum, 2,616 bbls.; Hancock, 342 bbls.; North American, 1,898 bbls.; Rio Grande, 2,958 bbls.; Signal Oil, 855 bbls.; Standard, 627 bbls., and Wellington, 456 bbls.

Mount Poso has a daily potential of 20,783 bbls. and a current allowable of

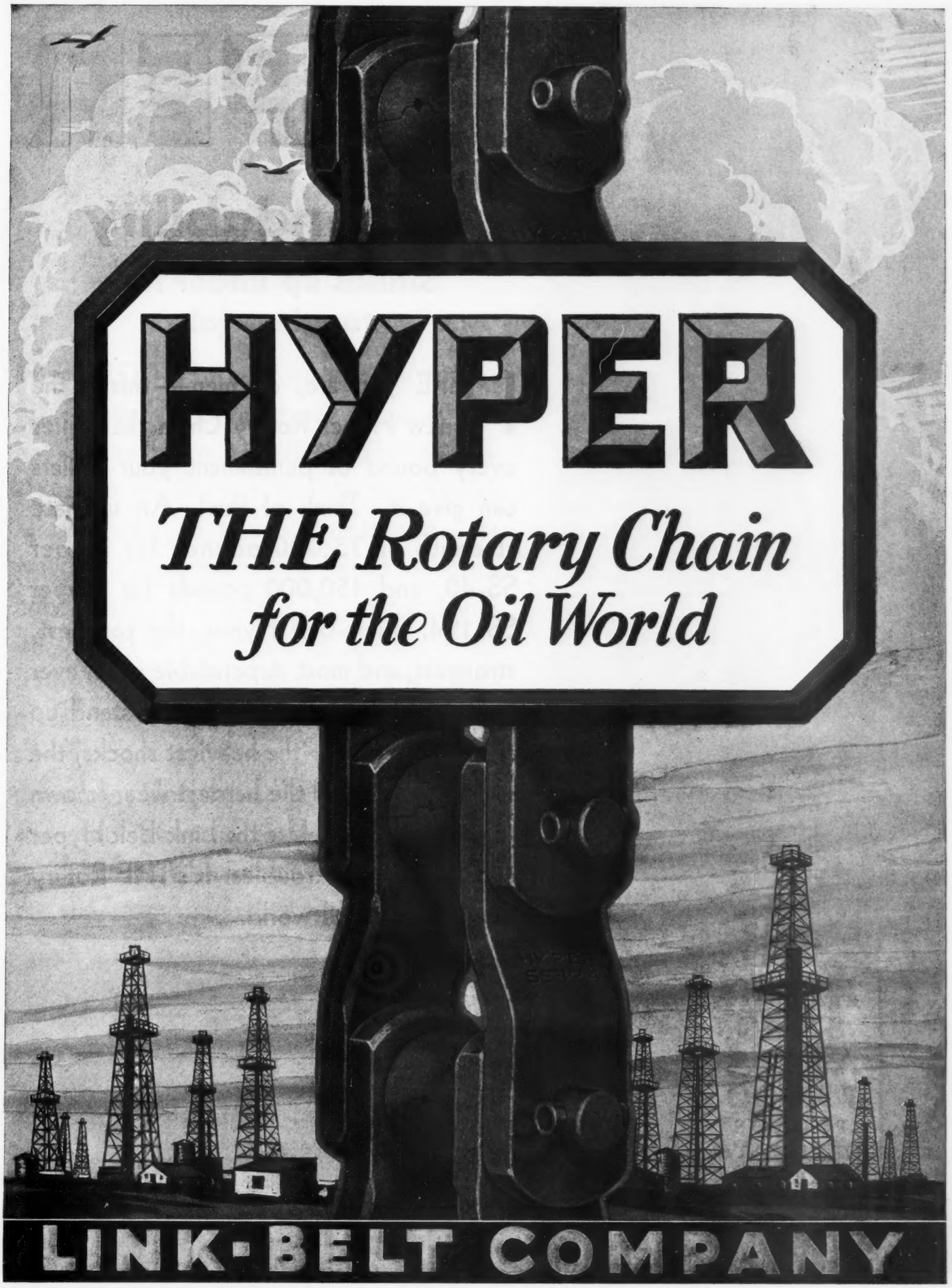
(Continued on Page 188)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Simmel, L. G., No. 1 Inglewood, Los Angeles Co.	21- 2-14	5,380	abandoning
Ohio Oil Co., No. 1 Monita, Los Angeles Co.	35- 3-14	mtl.	building rig
Raleigh Oil Co., No. 1 Malibu, Los Angeles Co.	1- 2-19	3,880	suspended
Clearwater Oil Co., No. 1 Bellflower, Los Angeles Co.	21- 3-12	5,100	sd. sh. drilling
Getty, George F., No. 1 Riviera, Los Angeles Co.	27- 2-12	4,200	hd. sd. drilling
Burlingham Pet., No. 1 Compton, Los Angeles Co.	17- 3-13	2,680	suspended
Diller, W., No. 1 Watts, Los Angeles Co.	8- 3-17	4,502	sd. sh. drilling
Crimson Pet., No. 1 Compton, Los Angeles Co.	22- 3-13	mtl.	building rig
Archer Oil Co., No. 1 Watson, Los Angeles Co.	17- 4-13	5,557	fishing
Harbor Oil Co., No. 1 Wilming on, Los Angeles Co.	18- 4-13	rig	suspended
Shell, No. 1 Van Nuys, Los Angeles Co.	19- 2-12	rig	rigging up
O'Donnell, J. E., No. 1 Bandini, Los Angeles Co.	16- 2-12	....	location
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,820	suspended
Rucker, R. C., No. 1 Puente, Los Angeles Co.	27- 2-10	3,391	sd. sh. drilling
Sherman, J. W., No. 1 Puente, Los Angeles Co.	33- 2- 8	850	suspended
Keck & Hall, No. 1 Puente, Los Angeles Co.	32- 2- 8	1,130	gas well
Marcel Pet. Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	1,590	br. sh. drilling
Richfield Oil Co., No. 1 Puente, Los Angeles Co.	34- 1-10	....	location
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	1,891	hd. sd. drilling
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	2,040	sd. sh. drilling
Martin, J. W., No. 1 Newhall, Los Angeles Co.	22- 1-17	1,160	hd. sd. drilling
Consolidated Oil Co., No. 1 Newhall, Los Angeles Co.	8- 3-16	1,555	cleaning out
National Sec., No. 1 Newhall, Los Angeles Co.	1- 3-16	874	suspended
Anderson, P. B., No. 1 Hasley Canyon, Los Angeles Co.	1- 3-16	900	suspended
Pioneer Pet., No. 1 Newhall, Los Angeles Co.	14- 3-16	516	hd. sd. drilling
Union, No. 1 Coyote, Sansinena, Los Angeles Co.	30- 2-10	2,105	redrilling
Western Gulf, No. 1 Brea Canyon, Los Angeles Co.	28- 2- 9	3,376	br. sh. drilling
Beard, G. F., No. 1 Brea Canyon, Los Angeles Co.	30- 2- 9	1,099	suspended
Standard, No. 1 Bastanchury, Coyote, Orange Co.	21- 3-10	4,515	sd. sh. drilling
Shell, No. 1 Bastanchury, Coyote, Orange Co.	28- 3-10	6,050	suspended
Graham & Loftus, No. 1 Coyote, Orange Co.	18- 3- 9	rig	rigging up
Union Oil Co., No. 1 Richfield, Orange Co.	13- 3- 9	3,325	granite
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Oil Well Eng. Co., No. 1 Newport, Orange Co.	21- 6-10	2,795	suspended
Fidelity Pet. Co., No. 1-A Murrietta, Riverside Co.	23- 7- 3	701	cleaning out
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	3,560	bl. sh. drilling
Imperial Valley Oil Co., Well No. 1, Imperial Co.	32-11-10	2,980	suspended
San Marcos Oil Co., Well No. 1, San Diego Co.	9- 12- 3	mtl.	building rig
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	2,170	suspended
McGregor Synd., No. 1 Del Mar, San Diego Co.	17-14- 3	1,220	sd. sh. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,205	sd. sh. drilling
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	550	cleaning out
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,525	cleaning out
Duncan, N. I., No. 1 Mojave, San Bernardino Co.	8- 4- 6	rig	suspended
Girard & Grimes, No. 1 Corona, San Bernardino Co.	8- 2- 8	660	sd. sh. drilling

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Union, No. 1 Buel Canyon, Santa Barbara Co.	X- 7-31	3,760	hd. sd. drilling
Tannehill, L. B., No. 1 Los Olivas, Santa Barbara Co.	23- 7-31	4,091	br. sh. drilling
Standard, No. 1 Point Conception, Santa Barbara Co.	X- 5-34	4,118	br. sh. drilling
Ohio Oil Co., No. 1 Lompoc, Santa Barbara Co.	2- 6-34	2,375	hd. sd. drilling
Prairie Oil Co., No. 1 Lompoc, Santa Barbara Co.	15- 7-35	786	br. sh. drilling
Fields Gasoline Co., No. 1 Santa Maria, Santa Barbara Co.	8- 9-33	100	sd. drilling
Carey, A., No. 1 Goleta, Santa Barbara Co.	1- 4-28	2,880	suspended
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	production test
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	4,350	cleaning out
General Pet., No. 133 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,040	redrilling
General Pet., No. 136 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,016	suspended
General Pet., No. 137 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,025	suspended
General Pet., No. 138 Goleta Tideland, Santa Barbara Co.	21- 4-28	2,279	suspended
General Pet., No. 139 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,035	suspended
Walsh, G., No. 135 Goleta Tideland, Santa Barbara Co.	20- 4-28	....	location
U. S. Pet., No. 141 Goleta Tideland, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta Tideland, Santa Barbara Co.	20- 4-28	1,032	suspended
U. S. Pet., No. 143 Goleta Tideland, Santa Barbara Co.	20- 4-28	1,019	suspended
El Camino Oil, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	40	suspended
Macmillan Pet., No. 134 Goleta Tideland, Santa Barbara Co.	21- 4-28	175	suspended
Caldwell Brown, No. 159 Goleta, Santa Barbara Co.	24- 4-29	rig	suspended
Standard, No. 2 Goleta, Santa Barbara Co.	X- 4-30	3,060	br. sh. drilling
Frazer & Oliver, No. 173, Capitan, Santa Barbara Co.	4- 4-30	101	suspended
McLaine, W. L., No. 175 Capitan, Santa Barbara Co.	4- 4-30	30	suspended
Durkee, R. S., No. 176 Capitan, Santa Barbara Co.	4- 4-30	30	sd. drilling
Oakburn Oil Co., No. 168 Capitan, Santa Barbara Co.	4- 4-30	370	suspended
Oakburn Oil Co., No. 169 Capitan, Santa Barbara Co.	4- 4-30	200	suspended
Oakburn Oil Co., No. 170 Capitan, Santa Barbara Co.	5- 4-30	1,302	production test
Oakburn Oil Co., No. 171 Capitan, Santa Barbara Co.	4- 4-30	200	suspended
Oakburn Oil Co., No. 172 Capitan, Santa Barbara Co.	4- 4-30	325	suspended
Cunningham, W., No. 176 Capitan, Santa Barbara Co.	4- 4-30	25	sd. drilling
Indian Pet., No. 174 Capitan, Santa Barbara Co.	4- 4-30	230	suspended
Rich, E. A., No. 178 Capitan, Santa Barbara Co.	4- 4-30	30	suspended
Shell, No. 1 Rutherford, Santa Barbara Co.	1- 4-31	30	sd. drilling
Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	4,300	sd. sh. drilling
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Shell, No. 1 Summerland, Santa Barbara Co.	18- 4-25	2,325	cleaning out
Standard, No. 1 Casitas, Santa Barbara Co.	26- 4-25	1,380	cemented
Continental, No. 1 Carpenteria, Santa Barbara Co.	33- 4-25	4,130	gas well—idle
Continental, No. 121 Carpenteria, Santa Barbara Co.	33- 4-25	55	suspended
Continental, No. 122 Carpenteria, Santa Barbara Co.	33- 4-25	158	suspended
Continental, No. 123 Carpenteria, Santa Barbara Co.	33- 4-25	125	suspended
Continental, No. 124 Carpenteria, Santa Barbara Co.	33- 4-25	1,375	deep test
Continental, No. 124-A Carpenteria, Santa Barbara Co.	33- 4-25	418	suspended
Continental, No. 125 Carpenteria, Santa Barbara Co.	33- 4-25	120	suspended
Continental, No. 126 Carpenteria, Santa Barbara Co.	33- 4-25	200	suspended
Continental, No. 127 Carpenteria, Santa Barbara Co.	33- 4-25	145	suspended
Continental, No. 128 Carpenteria, Santa Barbara Co.	33- 4-25	98	suspended
Continental, No. 129 Carpenteria, Santa Barbara Co.	33- 4-25	97	suspended
Exeter Oil Co., No. 163 Carpenteria, Santa Barbara Co.	32- 4-25	18	suspended
Getty, George F., No. 120 Carpenteria, Santa Barbara Co.	32- 4-25	68	cemented
Getty, George F., No. 130 Carpenteria, Santa Barbara Co.	32- 4-25	55	cemented
Snow, J., No. 190 Carpenteria, Santa Barbara Co.	32- 4-25	17	suspended
Standard, No. 5-9 Saticoy, Ventura Co.	10- 2-22	8,521	redrilling
Bolsa Chica, No. 1-A Temescal, Ventura Co.	4- 4-18	1,920	lots of gas
Fennell, E. A., No. 1 Piru, Ventura Co.	13- 4-19	1,390	sd. sh. drilling
Associated, No. 1 Rincon, Ventura Co.	19- 4-24	1,050	rd. sh. drilling
Continental, No. 3 Sulphur Mountain, Ventura Co.	21- 4-22	6,361	sd. sh. drilling
Shell, No. 4 Oxnard, Ventura Co.	36- 2-22	mtl.	survey hole
Milham Expltn., No. 9 Buttonwillow, Kern Co.	8-28-23	4,990	cleaning out
General Pet., No. 1 Buttonwillow, Kern Co.	6-28-23	90	sd. drilling
Lincoln Drlg. Co., No. 1 Buttonwillow, Kern Co.	17-29-24	135	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	962	gr. sd. drilling
Elmer Oil Co., No. 1 Bena, Kern Co.	15-30-30	3,800	suspended
Elmer Oil Co., No. 1-A Rosedale, Kern Co.	33-29-26	5,262	suspended
The Texas Company, No. 1 Edison, Kern Co.	23-29-29	6,052	hd. sd. drilling
Shell, No. 1 Edison, Kern Co.	33-29-29	2,240	hd. sd. drilling
Symark Oil Co., No. 1 Edison, Kern Co.	24-29-29	2,130	suspended
Sayre, F. M., No. 1 Edison, Kern Co.	5-30-29	4,206	sd. sh. drilling
Helen Pet., No. 1 Jasmine, Kern Co.	23-25-27	1,706	br. sh. drilling
Bardeen, H. A., No. 1 San Emidio, Kern Co.	18-10-23	312	sd. drilling
Currency Pet. Co., No. 1 Jacalitos, Fresno Co.	28-21-14	3,677	hd. sd. drilling
Knudsen, John, No. 1 Jacalitos, Fresno Co.	14-21-14	1,490	suspended
Petroleum Securities, No. 2 Huron, Fresno Co.	28-20-16	7,390	suspended
Western Gulf, No. 1 Penoche Valley, Fresno Co.	26-15-12	3,143	sd. sh. drilling
Union, No. 1 North Huasna, San Luis Obispo Co.	12-32-14	5,562	br. sh. drilling
Midwest Refining Co., No. 1 Huasna, San Luis Obispo Co.	34-31-15	3,870	gr. sd. drilling
Panorama Oil Co., Well No. 1, San Luis Obispo Co.	7-31-21	4,019	fishing
Paso Robles Synd., No. 1 Creston, San Luis Obispo Co.	27-27-11	3,742	cleaning out
Union, No. 1 King City, Monterey Co.	8-22- 8	2,910	br. sh. drilling
Standard, No. 1 King City, Monterey Co.	23-22- 7	3,742	hd. sd. drilling
Pacific Inland Oil Co., No. 1 Parkfield, Monterey Co.	19-23-15	781	cleaning out
Penn Wes ern, No. 1 Tulare Lake, Kings Co.	24-21-18	1,338	suspended
Wellport Oil Co., No. 1 Devils Den, Kings Co.	9-24-17	2,940	br. sh. drilling
Oceanside Oil Co., No. 1 Kreyenhagen, Kings Co.	32-22-16	300	abandoned
Twin State Oil Co., No. 1 Soldani, Mendocino Co.	14-12- 7	2,411	sd. sh. drilling
Barnhart Trust, No. 1 Oakdale, San Joaquin Co.	3- 2-10	2,560	hd. sd. drilling
White, Roy, No. 1 Pixley, Tulare Co.	8-23-26	4,060	hd. sd. drilling
Terminal Oil Co., No. 1 Tulare, Tulare Co.	29-20-25	4,198	suspended
Terra Bella Oil Co., No. 1 Porterville, Tulare Co.	35-22-27	900	cemented
Getty, George F., No. 1 Chowchilla, Madera Co.	8-10-14	206	sd. drilling



See our exhibit, Space 81, at the Oil Equipment and Engineering Exposition, Los Angeles

due to the large amount of sand produced during the early stages of production. Several projects have required three months to get under way, the wells being on production one week and off the next due to sand trouble.

Deep Tests

With the exception of the Belridge Oil Co.'s No. 15 at North Belridge, none of the several deep tests drilled in proven fields of the San Joaquin Basin during the past several months has shown any evidence of resulting in commercial production and the outlook is not any too favorable at present. The Shell has given up the attempt to develop commercial production in No. 1-A Perris at Midway-Sunset in Section 15-32-23 after carrying the hole down to 8,195 feet and work has already been started on plugging back. The Standard is not going to call it quits with No. 1 Mascot, in Section 26-32-23, as the bit is still going ahead in a hard brown shale at 9,128 feet. Both holes were started as a result of successful extension work by the Union Oil Co. when it proved commercial production on its Western Petroleum property in Section 27-32-23. Neither No. 1-A Perris or No. 1 Mascot was scheduled to be carried down to their present depth when drilling was started as both the Shell and Standard had expected to pick up the Western Petroleum sand above the 5,000-foot level. It was logical to continue drilling operations on both wells following the failure to secure production at the anticipated level as it was advantageous to make conclusive tests before quitclaiming their interests in the two properties. The Standard's No. 1 Mascot, notwithstanding the bit is already down 9,128 feet, is not yet entirely out of the picture as the predominating formation is still recorded on the well log as brown shale.

Elk Hills

Deep exploration work has also been successful up to the present in the Elk Hills Field of Kern County and with the recent abandonment of the Standard's No. 27 Kern County Land, in Section 21-30-25, deep drilling in this field will probably be suspended indefinitely. The deep well was carried down to 8,404 feet and subsequently plugged back to 2,940 feet. The rotary equipment used in the drilling of this deep test is being torn down preparatory to abandonment. Similar work of the Standard in the Wheeler Ridge Field, in the extreme southern part of the San Joaquin Basin, has not yet been completed. The deep test under way in this field is No. 36 Kern County Land, in Section 28-11-20. At last reports this well had reached 7,110 feet without encountering any commercial possibilities below the present known production levels.

The failure of these deep projects to result in discoveries of additional productive horizons does not necessarily mean that the areas are definitely removed as future possibilities. Comparatively little is known of the future possibilities of the Midway-Sunset Field. This field, approximately 35,000 acres, consists of several major and minor independent productive areas, most of which remain untested so far as possible deep zones are concerned. It is likely that additional deep zone exploration work will be conducted from time to time. The irregularity of subsurface conditions and the development of production in lenticular sands has retarded exploration work in Midway-Sunset Field to a large extent. This is especially true of several areas where production has been developed in the Maricopa brown shale as distinguished from other sections where production is secured from a normal oil sand. Present production in the area now undergoing development out in the Maricopa Flats and oil from the Republic area centering around Section 7-32-23 and being developed by the Republic Petroleum and Chanslor-Canfield Midway Oil Co., is coming from a normal oil sand, in contrast with the production developed several years ago in the Maricopa brown shale by the Obispo Oil Co. in Section 32-12-23.

Round Mountain

The Shell Oil Corp. successfully completed No. 9 on Jewett Lease No. 2 in the Round Mountain Field of Kern County early in the week and registered an initial daily production of 140 bbls. of 19.6 gravity oil from 1,690 feet, the hole having been finished with a 6¼-inch oil string carrying 173 feet of 60 and 80-mesh screen. The Shell recently spudded in two new wells in this field and will probably continue a conservative development campaign notwithstanding curtailment under way. The Round Mountain Field has been more or less sidetracked since its discovery due to the desires of the Shell and Honolulu Consolidated to retard development until conditions improve.

Drilling operations in the Mount Poso Field of Kern County are more or less at a standstill in sympathy with crude curtailment and it is likely development work will be restricted indefinitely. The Superior Oil Co. is making preparations to start a new well on the Sheel property at Fruitvale in Section 28-29-27 and actual spud is scheduled to be made late next week. The General Petroleum is also making preparations to start a new well in the Fruitvale Field as material is on ground for No. 4 Shearer. The Shell is running three strings of tools in this field at present, having spudded in No. 1 Moore, in Section 21-29-27. The Belridge Oil Co. is putting the finishing touches on a new steel derrick which replaces the old wooden rig which towered over its well No. 15, in Section 26-27-20, and final preparations are being completed to test out the deep zone possibility in the North Belridge Field in Section 26-27-20. The Union has spudded in No. 5 Gibson, in Section 36-27-20, and has staked a location for No. 6 on the same property. The Continental will probably start drilling operations on No. 1 Result some time within a few days as this project is just about completely rigged up.

To keep a closer check on production and curtailment activities in the San Joaquin Valley, Umpire Paul Grimm has opened an office in the Padre Hotel at Bakersfield and W. R. Wardner has been placed in charge of that sector. In conformity with the existing curtailment program, Maricopa Flats, Round Mountain, Kern River Front and Mount Poso will be permitted to produce 11,862 bbls., 3,306 bbls., 12,897 bbls. and 10,032 bbls. per day, respectively. The projected curtailment in each of these fields is 43 per cent of the established potentials. These four fields have a present potential daily production of 71,789 bbls. and with a 43 per cent curtailment have a daily allowable of 41,390 bbls.

Kern Front Field

The Kern Front Field has a daily potential of 22,626 bbls. and its current allowable is 12,897 bbls. The Associated Oil Co.'s allowable is 624 bbls. daily; Bishop Corp., 570 bbls.; California Star, 114 bbls.; Carrec Oil, 14 bbls.; Chanslor-Canfield Midway Oil Co., 1,881 bbls.; General Petroleum, 2,445 bbls.; Getty, 1,436 bbls.; Italo, 68 bbls.; Pacific Western, 1,169 bbls.; Richfield, 640 bbls.; St. Helens, 322 bbls.; Standard, 1,489 bbls.; The Texas Company, 1,425 bbls., and Union Oil Co., 100 bbls. Maricopa Flats has a daily potential of 20,810 bbls. and current allowable of 11,862 bbls. The allowable of the Barnsdall is 1,425 bbls.; Birch-Royer, 314 bbls.; California Western, 371 bbls.; Doyle Petroleum, 2,616 bbls.; Hancock, 342 bbls.; North American, 1,898 bbls.; Rio Grande, 2,958 bbls.; Signal Oil, 855 bbls.; Standard, 627 bbls., and Wellington, 456 bbls.

Mount Poso has a daily potential of 20,783 bbls. and a current allowable of

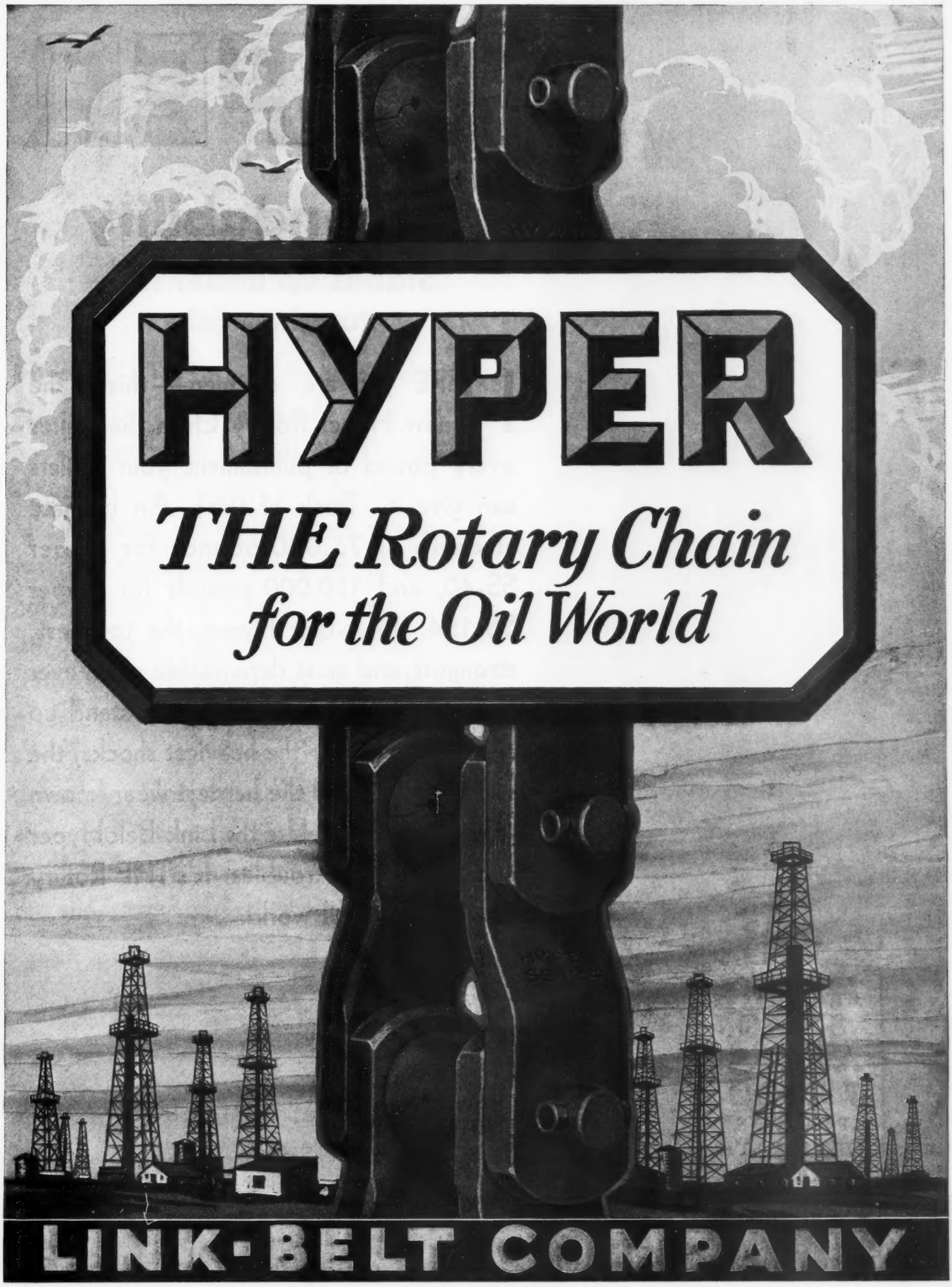
(Continued on Page 188)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Simmel, L. G., No. 1 Inglewood, Los Angeles Co.	21- 2-14	5,380	abandoning
Ohio Oil Co., No. 1 Monita, Los Angeles Co.	35- 3-14	mtl.	building rig
Raleigh Oil Co., No. 1 Malibu, Los Angeles Co.	1- 2-19	3,880	suspended
Clearwater Oil Co., No. 1 Bellflower, Los Angeles Co.	21- 3-12	5,100	sd. sh. drilling
Getty, George F., No. 1 Riviera, Los Angeles Co.	27- 2-12	4,200	hd. sd. drilling
Burlingham Pet., No. 1 Compton, Los Angeles Co.	17- 3-13	suspended	sd. sh. drilling
Diller, W., No. 1 Watts, Los Angeles Co.	8- 3-17	4,502	sd. sh. drilling
Crimson Pet., No. 1 Compton, Los Angeles Co.	22- 3-13	mtl.	building rig
Archer Oil Co., No. 1 Watson, Los Angeles Co.	17- 4-13	5,557	fishing
Harbor Oil Co., No. 1 Wilming on, Los Angeles Co.	18- 4-13	rig	suspended
Shell, No. 1 Van Nuys, Los Angeles Co.	19- 2-12	rig	rigging up
O'Donnell, J. E., No. 1 Bandini, Los Angeles Co.	16- 2-12	....	location
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,820	suspended
Rucker, R. C., No. 1 Puente, Los Angeles Co.	27- 2-10	3,391	sd. sh. drilling
Sherman, J. W., No. 1 Puente, Los Angeles Co.	33- 2- 8	850	suspended
Keck & Hall, No. 1 Puente, Los Angeles Co.	32- 2- 8	1,130	gas well
Marcel Pet. Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	1,590	br. sh. drilling
Richfield Oil Co., No. 1 Puente, Los Angeles Co.	34- 1-10	....	location
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	1,891	hd. sd. drilling
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	2,040	sd. sh. drilling
Martin, J. W., No. 1 Newhall, Los Angeles Co.	22- 1-17	1,160	hd. sd. drilling
Consolidated Oil Co., No. 1 Newhall, Los Angeles Co.	8- 3-16	1,555	cleaning out
National Sec., No. 1 Newhall, Los Angeles Co.	1- 3-16	874	suspended
Anderson, P. B., No. 1 Hasley Canyon, Los Angeles Co.	1- 3-16	900	suspended
Pioneer Pet., No. 1 Newhall, Los Angeles Co.	14- 3-16	516	hd. sd. drilling
Union, No. 1 Coyote, Sansinena, Los Angeles Co.	30- 2-10	2,105	redrilling
Western Gulf, No. 1 Brea Canyon, Los Angeles Co.	28- 2- 9	3,376	br. sh. drilling
Beard, G. F., No. 1 Brea Canyon, Los Angeles Co.	30- 2- 9	1,099	suspended
Standard, No. 1 Bastanchury, Coyote, Orange Co.	21- 3-10	4,515	sd. sh. drilling
Shell, No. 1 Bastanchury, Coyote, Orange Co.	28- 3-10	6,050	suspended
Graham & Loftus, No. 1 Coyote, Orange Co.	18- 3- 9	rig	rigging up
Union Oil Co., No. 1 Richfield, Orange Co.	13- 3- 9	3,325	granite
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Oil Well Eng. Co., No. 1 Newport, Orange Co.	21- 6-10	2,795	suspended
Fidelity Pet. Co., No. 1-A Murrietta, Riverside Co.	23- 7- 3	701	cleaning out
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	3,560	bl. sh. drilling
Imperial Valley Oil Co., Well No. 1, Imperial Co.	32-11-10	2,980	suspended
San Marcos Oil Co., Well No. 1, San Diego Co.	9- 12- 3	mtl.	building rig
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	2,170	suspended
McGregor Synd., No. 1 Del Mar, San Diego Co.	17-14- 3	1,220	sd. sh. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,205	sd. sh. drilling
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	550	cleaning out
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,525	cleaning out
Duncan, N. I., No. 1 Mojave, San Bernardino Co.	8- 4- 6	rig	suspended
Girard & Grimes, No. 1 Corona, San Bernardino Co.	8- 2- 8	660	sd. sh. drilling

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Union, No. 1 Buel Canyon, Santa Barbara Co.	X- 7-31	3,760	hd. sd. drilling
Tannehill, L. B., No. 1 Los Olivas, Santa Barbara Co.	23- 7-31	4,091	br. sh. drilling
Standard, No. 1 Point Conception, Santa Barbara Co.	X- 5-34	4,118	br. sh. drilling
Ohio Oil Co., No. 1 Lompoc, Santa Barbara Co.	2- 6-34	2,375	hd. sd. drilling
Prairie Oil Co., No. 1 Lompoc, Santa Barbara Co.	15- 7-35	786	br. sh. drilling
Fields Gasoline Co., No. 1 Santa Maria, Santa Barbara Co.	8- 9-33	100	sd. drilling
Carey, A., No. 1 Goleta, Santa Barbara Co.	1- 4-28	2,880	suspended
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	production test
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	4,350	cleaning out
General Pet., No. 133 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,040	redrilling
General Pet., No. 136 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,016	suspended
General Pet., No. 137 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,025	suspended
General Pet., No. 138 Goleta Tideland, Santa Barbara Co.	21- 4-28	2,279	suspended
General Pet., No. 139 Goleta Tideland, Santa Barbara Co.	21- 4-28	1,035	suspended
Walsh, G., No. 135 Goleta Tideland, Santa Barbara Co.	20- 4-28	....	location
U. S. Pet., No. 141 Goleta Tideland, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta Tideland, Santa Barbara Co.	20- 4-28	1,032	suspended
U. S. Pet., No. 143 Goleta Tideland, Santa Barbara Co.	20- 4-28	1,019	suspended
El Camino Oil, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	40	suspended
Macmillan Pet., No. 134 Goleta Tideland, Santa Barbara Co.	21- 4-28	175	suspended
Caldwell Brown, No. 159 Goleta, Santa Barbara Co.	24- 4-29	rig	suspended
Standard, No. 2 Goleta, Santa Barbara Co.	X- 4-30	3,060	br. sh. drilling
Frazer & Oliver, No. 173, Capitan, Santa Barbara Co.	4- 4-30	101	suspended
McLaine, W. L., No. 175 Capitan, Santa Barbara Co.	4- 4-30	30	suspended
Durkee, R. S., No. 176 Capitan, Santa Barbara Co.	4- 4-30	30	sd. drilling
Oakburn Oil Co., No. 168 Capitan, Santa Barbara Co.	4- 4-30	370	suspended
Oakburn Oil Co., No. 169 Capitan, Santa Barbara Co.	4- 4-30	200	suspended
Oakburn Oil Co., No. 170 Capitan, Santa Barbara Co.	5- 4-30	1,302	production test
Oakburn Oil Co., No. 171 Capitan, Santa Barbara Co.	4- 4-30	200	suspended
Oakburn Oil Co., No. 172 Capitan, Santa Barbara Co.	4- 4-30	325	suspended
Cunningham, W., No. 176 Capitan, Santa Barbara Co.	4- 4-30	25	sd. drilling
Indian Pet., No. 174 Capitan, Santa Barbara Co.	4- 4-30	230	suspended
Rich, E. A., No. 178 Capitan, Santa Barbara Co.	4- 4-30	30	suspended
Shell, No. 1 Rutherford, Santa Barbara Co.	1- 4-31	30	sd. drilling
Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	4,300	sd. sh. drilling
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Shell, No. 1 Summerland, Santa Barbara Co.	18- 4-25	2,325	cleaning out
Standard, No. 1 Casitas, Santa Barbara Co.	26- 4-25	1,380	cemented
Continental, No. 1 Carpenteria, Santa Barbara Co.	33- 4-25	4,130	gas well—idle
Continental, No. 121 Carpenteria, Santa Barbara Co.	33- 4-25	55	suspended
Continental, No. 122 Carpenteria, Santa Barbara Co.	33- 4-25	158	suspended
Continental, No. 123 Carpenteria, Santa Barbara Co.	33- 4-25	125	suspended
Continental, No. 124 Carpenteria, Santa Barbara Co.	33- 4-25	1,375	deep test
Continental, No. 124-A Carpenteria, Santa Barbara Co.	33- 4-25	418	suspended
Continental, No. 125 Carpenteria, Santa Barbara Co.	33- 4-25	120	suspended
Continental, No. 126 Carpenteria, Santa Barbara Co.	33- 4-25	200	suspended
Continental, No. 127 Carpenteria, Santa Barbara Co.	33- 4-25	145	suspended
Continental, No. 128 Carpenteria, Santa Barbara Co.	33- 4-25	98	suspended
Continental, No. 129 Carpenteria, Santa Barbara Co.	33- 4-25	97	suspended
Exeter Oil Co., No. 163 Carpenteria, Santa Barbara Co.	33- 4-25	18	suspended
Getty, George F., No. 120 Carpenteria, Santa Barbara Co.	32- 4-25	68	cemented
Getty, George F., No. 130 Carpenteria, Santa Barbara Co.	32- 4-25	55	cemented
Snow, J., No. 190 Carpenteria, Santa Barbara Co.	32- 4-25	17	suspended
Standard, No. 5-9 Saticoy, Ventura Co.	10- 2-22	8,520	redrilling
Bolsa Chica, No. 1-A Temescal, Ventura Co.	4- 4-18	1,920	lots of gas
Fennell, E. A., No. 1 Piru, Ventura Co.	13- 4-19	1,390	sd. sh. drilling
Associated, No. 1 Rincon, Ventura Co.	19- 4-24	1,050	rd. sh. drilling
Continental, No. 3 Sulphur Mountain, Ventura Co.	21- 4-22	6,361	sd. sh. drilling
Shell, No. 4 Oxnard, Ventura Co.	36- 2-22	mtl.	survey hole
Milham Expltn., No. 9 Buttonwillow, Kern Co.	8-28-23	4,990	cleaning out
General Pet., No. 1 Buttonwillow, Kern Co.	6-28-23	90	sd. drilling
Lincoln Drlg. Co., No. 1 Buttonwillow, Kern Co.	17-29-24	135	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	962	gr. sd. drilling
Elmer Oil Co., No. 1 Bena, Kern Co.	15-30-30	3,800	suspended
Elmer Oil Co., No. 1-A Rosedale, Kern Co.	33-29-26	5,262	suspended
The Texas Company, No. 1 Edison, Kern Co.	23-29-29	6,052	hd. sd. drilling
Shell, No. 1 Edison, Kern Co.	33-29-29	2,240	hd. sd. drilling
Symark Oil Co., No. 1 Edison, Kern Co.	24-29-29	2,130	suspended
Sayre, F. M., No. 1 Edison, Kern Co.	5-30-29	4,206	sd. sh. drilling
Helen Pet., No. 1 Jasmine, Kern Co.	23-25-27	1,706	br. sh. drilling
Bardeen, H. A., No. 1 San Emidio, Kern Co.	18-10-23	312	sd. drilling
Currency Pet. Co., No. 1 Jacalitos, Fresno Co.	28-21-14	3,677	hd. sd. drilling
Knudsen, John, No. 1 Jacalitos, Fresno Co.	14-21-14	1,490	suspended
Petroleum Securities, No. 2 Huron, Fresno Co.	28-20-16	7,390	suspended
Western Gulf, No. 1 Penoche Valley, Fresno Co.	26-15-12	3,143	sd. sh. drilling
Union, No. 1 North Huasna, San Luis Obispo Co.	12-32-14	5,562	br. sh. drilling
Midwest Refining Co., No. 1 Huasna, San Luis Obispo Co.	34-31-15	3,870	gr. sd. drilling
Panorama Oil Co., Well No. 1, San Luis Obispo Co.	7-31-21	4,019	fishing
Paso Robles Synd., No. 1 Creston, San Luis Obispo Co.	27-27-11	3,742	cleaning out
Union, No. 1 King City, Monterey Co.	8-22- 8	2,910	br. sh. drilling
Standard, No. 1 King City, Monterey Co.	23-22- 7	3,742	hd. sd. drilling
Pacific Inland Oil Co., No. 1 Parkfield, Monterey Co.	19-23-15	781	cleaning out
Penn Wes ern, No. 1 Tulare Lake, Kings Co.	24-21-18	1,338	suspended
Wellport Oil Co., No. 1 Devils Den, Kings Co.	9-24-17	2,940	br. sh. drilling
Oceanside Oil Co., No. 1 Kreyenhagen, Kings Co.	32-22-16	300	abandoned
Twin State Oil Co., No. 1 Soldani, Mendocino Co.	14-12- 7	2,411	sd. sh. drilling
Barnhart Trust, No. 1 Oakdale, San Joaquin Co.	3- 2-10	2,560	hd. sd. drilling
White, Roy, No. 1 Pixley, Tulare Co.	8-23-26	4,060	hd. sd. drilling
Terminal Oil Co., No. 1 Tulare, Tulare Co.	29-20-25	4,198	suspended
Terra Bella Oil Co., No. 1 Porterville, Tulare Co.	35-22-27	900	cemented
Getty, George F., No. 1 Chowchilla, Madera Co.	8-10-14	206	sd. drilling



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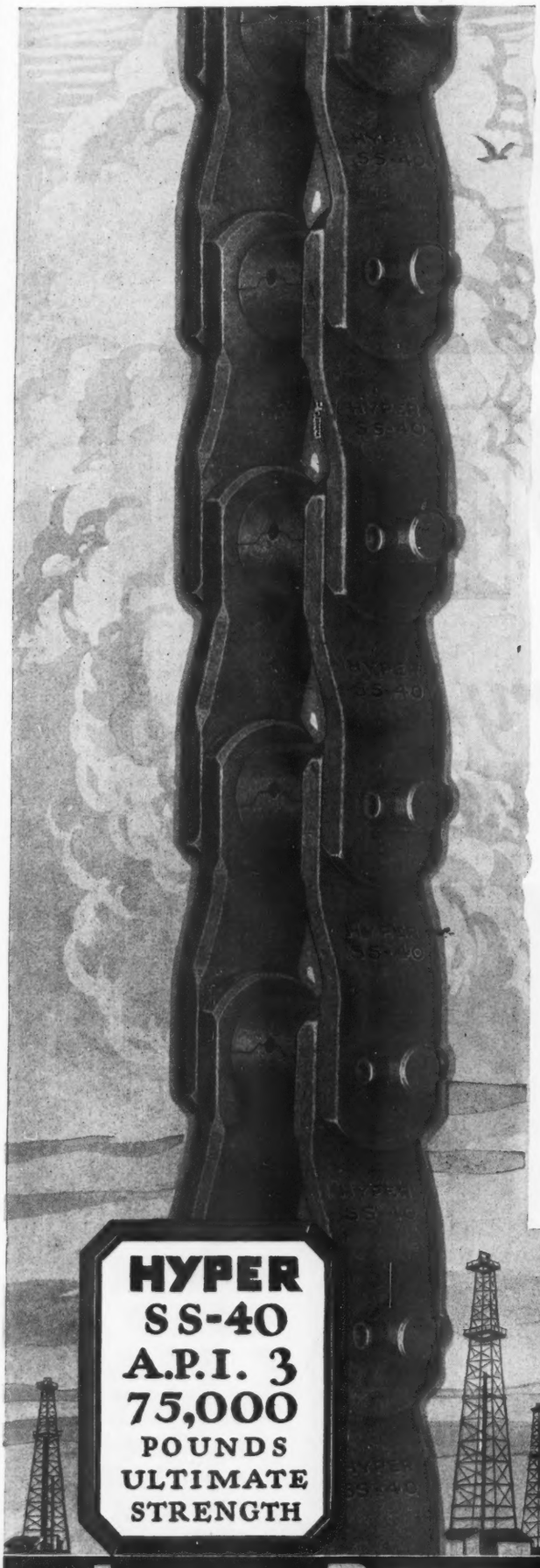

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Stands up under the toughest job

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75,000
POUNDS
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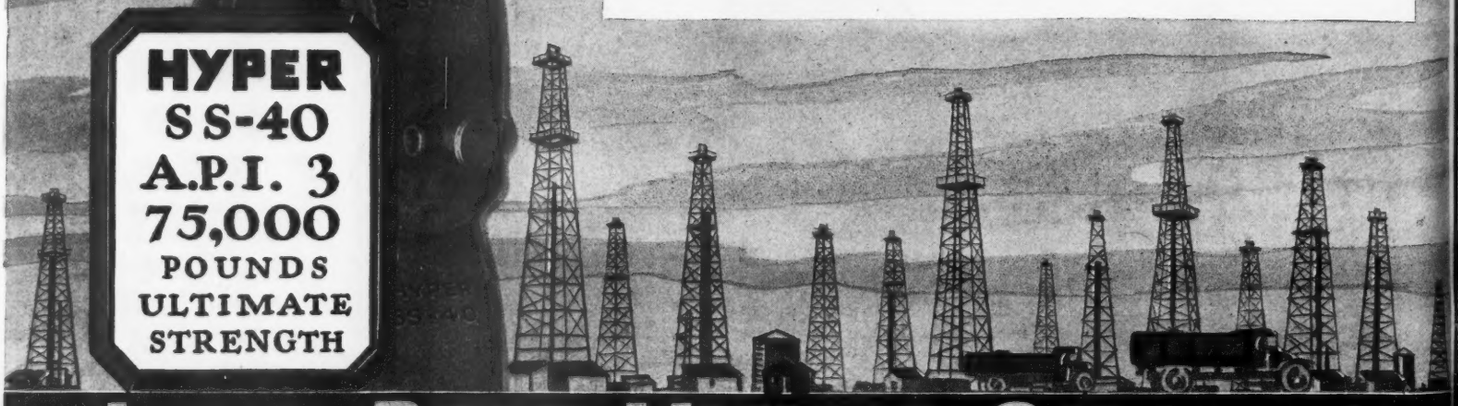
STRENGTH



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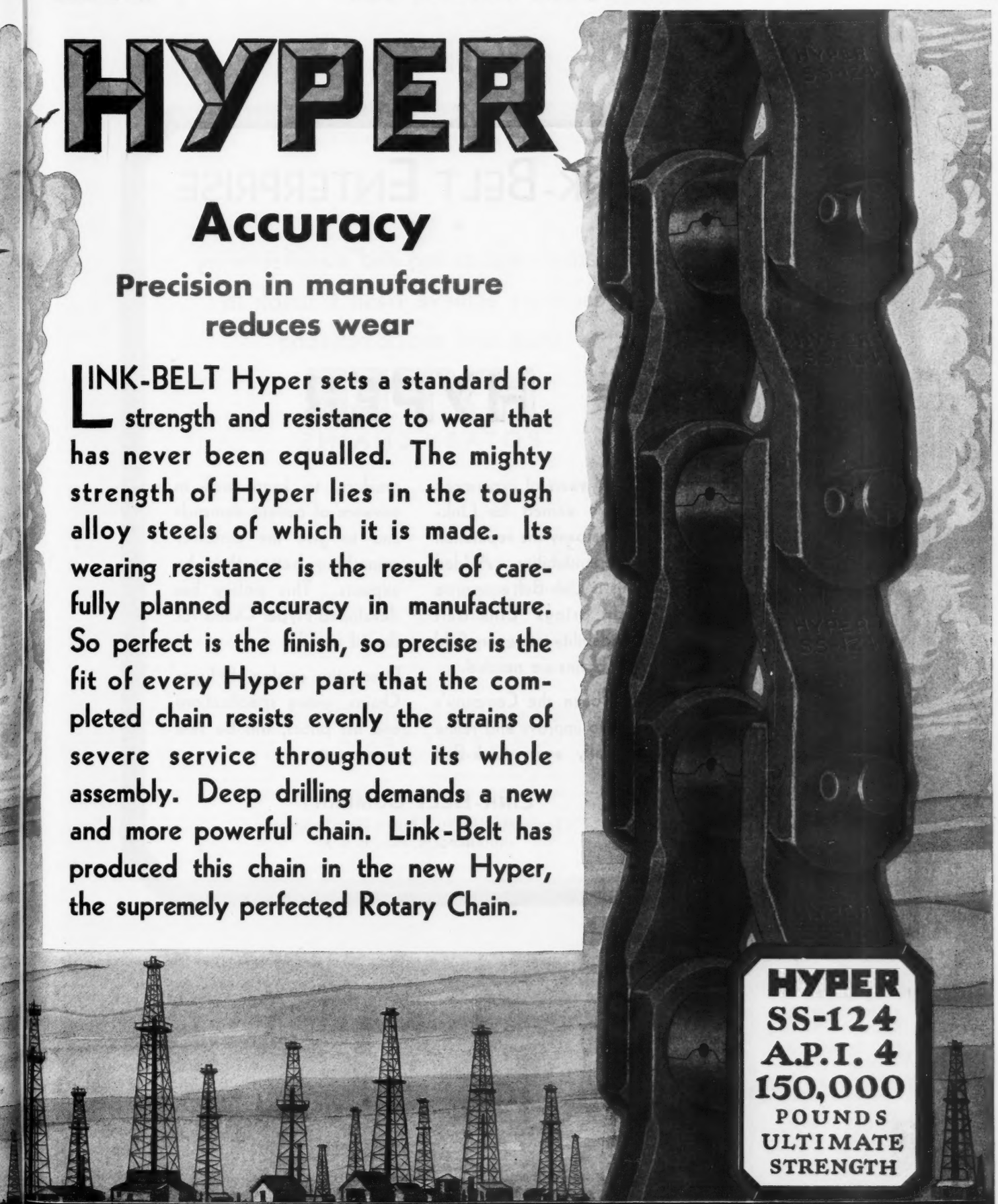
LINK-BELT Hyper sets a standard for strength and resistance to wear that has never been equalled. The mighty strength of Hyper lies in the tough alloy steels of which it is made. Its wearing resistance is the result of carefully planned accuracy in manufacture. So perfect is the finish, so precise is the fit of every Hyper part that the completed chain resists evenly the strains of severe service throughout its whole assembly. Deep drilling demands a new and more powerful chain. Link-Belt has produced this chain in the new Hyper, the supremely perfected Rotary Chain.



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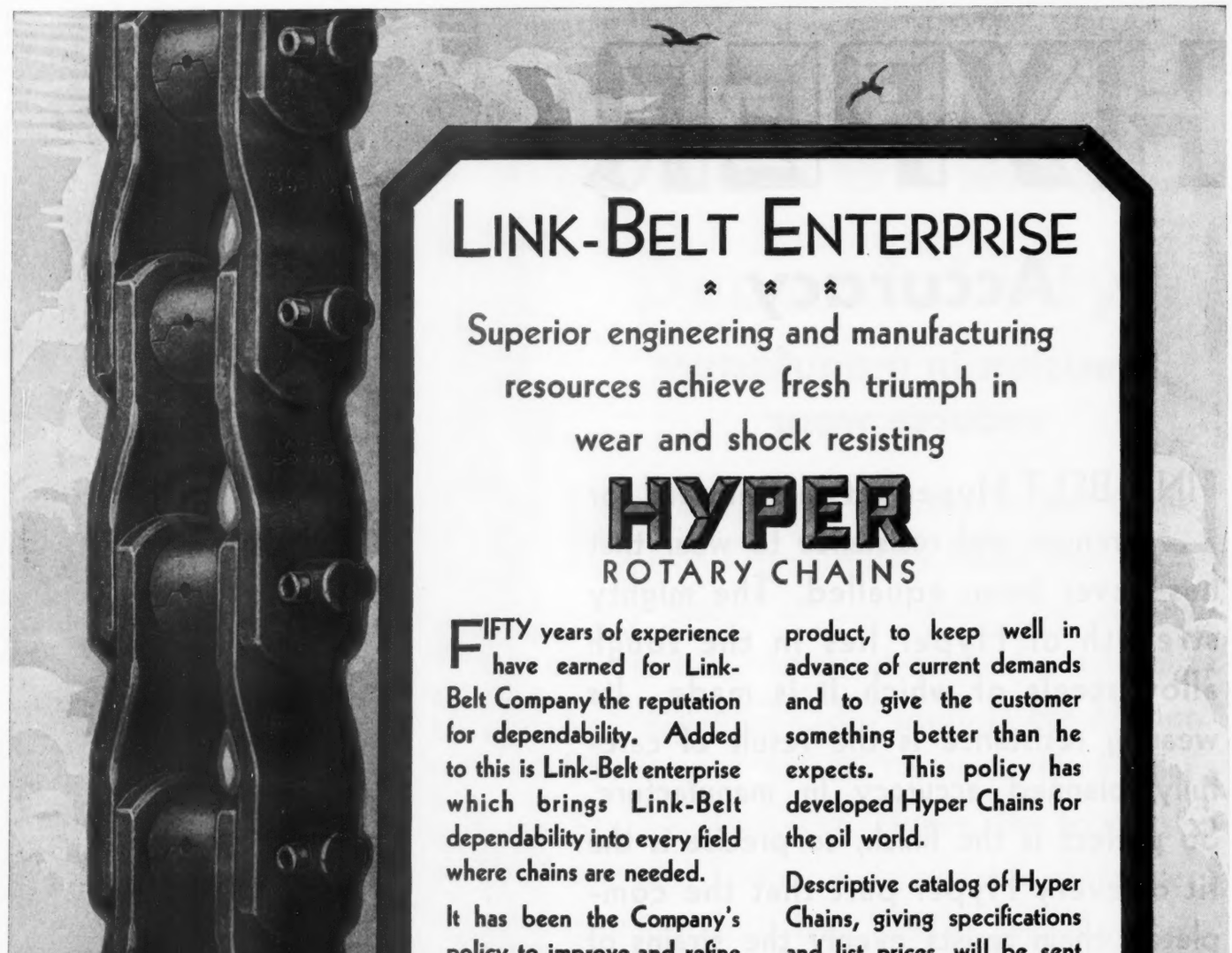

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It has been the Company's policy to improve and refine continually every Link-Belt product, to keep well in advance of current demands and to give the customer something better than he expects. This policy has developed Hyper Chains for the oil world.

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LINK-BELT COMPANY

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Thirty Completions in Central Ohio

Muskingum County Being Given Thorough Testing. One Completion in Old Lima Field, Begun Two Years Ago

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, March 10.—Muskingum County in the central Ohio division is being given a very thorough testing out and shows unusual activity for a deep sand area. In the old Lima Field of northwestern Ohio but one completion was reported and that was a wildcat that has been under way for close to two years, being Abbott Brothers' No. 1, on the Harrison-Goddard farm, Section 1, Wayne Township, in the eastern portion of Auglaize County, which is dry. Northeast of Lima, in Bath Township, Allen County, Roalman & Pease are drilling a second test on the C. A. Landes, Section 14, and C. A. and F. J. Peavy are starting No. 3 C. A. Hoover, Section 24. In Hopewell Township, Seneca County, J. H. Murphy & Sons are drilling on the S. Wolfe, Section 1. In Shelby County, Cynthian Township, Ben Heilers is drilling a second test on his own farm, Section 15. Roundhead Oil & Gas Co. is starting No. 8 on the Erwin Hite farm, in McDonald Township, Hardin County. Considerable leasing is being done in Damascus and adjoining townships, in Henry County, where the Beaver Creek Oil Co.'s wildcat on the T. U. McClure, Section 26, Damascus Township, which produced 30 bbls. initial and 10 bbls. the second 24 hours. The oil was found in the Trenton at a total depth of 1,746 feet, or 80 feet in the lime formation.

CENTRAL OHIO

Thirty completions were reported from the Central Ohio fields, of which 10 are producers with an initial of 83 bbls., 9 dry holes and 11 gas wells. The new work starting shows 20 new locations staked for wells and 21 started spudding, a total of 41 in new work. The oil wells were unusually light, but when some of the wells nearing the pay sands in several of the counties are completed, then production will grow.

In Ashland County, Orange Township, the Ohio Fuel Gas Co. has a fair gas well in No. 1-4,974 on the Al Ott, Section 29, and is drilling No. 1-5,044 F. M. Lovering, Section 21, same township. In Lake Township, John Neading and others' test on the George Horn, Section 21, produced around 1 bbl. from 619 to 647 feet. Meltzer and others are drilling No. 5 Michael Ott, Section 34, Mohican Township. Fetter and others found a dry hole on the Wayne Wile, Section 2, Montgomery Township, as no sand was found at a depth of 2,841 feet. In Perry Township, Crownshield and others' No. 3 Martin M. Wheeler is reported at 10 bbls. initial from 725 to 775 feet, and Coast and others are drilling No. 7 Edward Barnhart, Section 29, same township. Robinson and others are drilling No. 3 John S. Moffett, Section 30, Vermillion Township, while their No. 2, same farm, pumped 6 bbls. initial from 807 to 829 feet. Barnhart and others are drilling on the W. A. and A. J. White, Section 26, Lafayette Township, Medina County.

In Lorain County, the Ohio Fuel Gas Co. is drilling No. 1-5,042 on the Carl Dietrick, Lot 18, Carlisle Township.

In Wayne County, Congress Township, the Ohio Fuel Gas Co. found a dry hole in No. 1-4,976 Guy C. Boldman, Section 18. Faulkner and others got an average gas well in No. 3 E. L. Donaldson, Section 26, Chester Township. Ohio Fuel Gas Co. is testing No. 1-4,101 G. W. Garst, Section 13, Plain Township.

In Holmes County, the Lydic Oil & Gas Co. got a very light gas well in No. 7 A. R. Mackey, Lot 6, Monroe Township, from 693 to 698 feet.

Knox County

In Knox County, Ohio Fuel Gas Co.'s No. 6-4,927 Albert J. Richert, Lot 25, Brown Township, is a dry hole. Same company is drilling deeper No. 1-547 William Myers, Lot 38, and the Upham Gas Co. is deepening its No. 1 on the Zion Church property, Lot 3, same township, while the East Ohio Gas Co. found a fair gas producer in a second test on the Jubilee Thrasher, Lot 22, in both the Stray and Clinton formations, at a total depth of 2,806 feet.

In Coshocton County, Carpenter, Conkle & Wagers' test on the J. W. Patterson, Section 6, Clark Township, produced 5 bbls. from 731 to 751 feet. Ohio Fuel Gas Co. is drilling No. 1-4,985 A. A. Phillips, in the third quarter of Franklin Township.

In Summitt County, Franklin Township, Kime and others have a nice gas well on the William and Clement Kepler farm, Section 13, from 4,000-20 feet. In Greene Township, G. W. Crouse brought in an excellent gasser in No. 5 Crouse farm, Section 18, from 4,067-4,103 feet, and is nearing pay in No. 6.

In Licking County, Perry Township, the Hope Construction & Refining Co.'s No. 6 J. C. Wright, Section 15, pumped 4 bbls. from 605 to 617 feet. Same company made a location for No. 4 L. C. Giffin, Section 24, and the Whitehill Oil Co. is drilling No. 4 Ira C. Rine, Section 3, same township. In Fallsburg Township, the Ohio Fuel Gas Co. made a location for No. 5-062 Wallace Davidson, Section 13, and Hulse & Kundtz set a stake for No. 3 John Chaney, Section 21. In Hanover Township, Hope Construction & Refining Co.'s No. 1 A. S. and J. Settles, Section 13, pumped 3 bbls. from 2,847-85 feet. This company made locations for No. 2 A. D. Howell and No. 6 Charles Obannon, both in Section 15, same township.

Muskingum County

A duster was drilled by the Ohio Fuel Gas Co. in No. 1-4,963 Edward Swigart, Section 4, Falls Township, Muskingum County, from 3,622-77 feet. Same company made a location for No. 1-5,037 B. O. Taylor, same township. In Hopewell Township, the Ohio Fuel Gas Co. made a location for No. 1-5,039 Sina Varner, Section 5. Hopewell Gas & Fuel Co. made a location for No. 3 Sol. L. Burrier, Section 5, and the Hope Construction & Refining Co. made a location on the G. W. Wilking, Section 4, same township. In Clay Township, Abe Snider and others are drilling No. 1 Thomas Forgrave, Section 3, which is in among some of the big producers found recently in this section. In Perry Township, the Ohio Fuel Gas Co. found a rather light gas well in No. 2-4,951 John Hicks, in the third quarter section from 4,022-67 feet, total depth 4,251 feet. Same company is drilling No. 1-5,017 Charles A. Johnson, same quarter, and made a location for No. 1-5,060 on the W. L. McCurdy, Section 2, and for No. 1-5,061 J. L. Sutter, Section 7, same township. In Newton Township, William Kline and others got a dry hole in No. 1 George Spring, Section 34, from 3,496-3,542 feet, total depth 3,553 feet.

Daily Oil Co. made a location on the Charles J. Weaver, Section 16, Brush Creek Township, and the Wehrle Gas Co. set a stake on the G. E. Wells, Section 7, Licking Township, Muskingum County.

In Athens County, Ames Township, the Ohio Fuel Gas Co. has a light gas well in No. 1-4,022 Edgar C. Jones farm, Section 6, in the lower Berea sand from 1,376-92 feet, total depth 1,401 feet. Same company is drilling No. 2-4,952 F. J. Beasley, Section 3. Fairfield Oil & Gas Co. is drilling deeper its test on the Sam Jeffers, in fractional Section 34, Lodi Township. Ohio Fuel Gas Co. is drilling deeper No. 2-5,009 T. N. Hoover, Sections 1 and 2, Waterloo Township, same county. Same company staked a location for No. 2-5,066 Ben Barnhart, Section 3, Carthage Township. Townsend Oil & Gas Co.'s No. 7 Isaac Castle, Section 30, Alexander Township, produced 4 bbls. initial from the Berea sand from 1,227-33 feet. Coolville Gas Co. is drilling on the State of Ohio land, Section 29, Troy Township, same county.

In Meigs County, Sutton Township, Tyree and others report a dry hole in No. 3 Stanley Holter, Section 13. Batchelor & Delbert also have a dry hole on the John and Nellie Arnett, same township. Southern Ohio Petroleum Co. has a fairly nice gas well on the Harry Potts, Section 36, same township.

Vinton County

In Vinton County, Knox Township, H. C. Farmer and others have a very good gas well in No. 3 on the J. W. Stanley, Section 4.

In Lake County, John Sherwin's test on his own farm, Section 4, Willoughby Township, developed a dry hole.

In Tuscarawas County, Oxford Township, Phillips and others have a light gas well on the Ellen M. Couts, Section 21, at a depth of 1,198 feet. Ohio Fuel Gas Co. has a fairly nice gas producer in No. 1-4,912 J. C. Davis, same section, at 3,479 feet. Same company made a location for No. 1 on the Leslie Little, same section. Traders Oil & Gas Co. made a location on the Quillan-Crawford, same section, and the Gordon-Hopewell Oil & Gas Co. is drilling No. 1 Phil Lamneck, same section. In Washington Township, the Gordon Oil Co. is drilling No. 1 George W. Asher, Lot 30, and the Capital Drilling Co. is working on No. 2 on the Little-Paulson, Section 32, same township.

In Stark County, Lawrence Township, Penn Oil & Gas Co. has a dry hole on the George Brickley, Section 4, from 3,811-34 feet. East Ohio Gas Co. is drilling a wildcat on the C. Youtz, Section 27, Osnaburg Township, same county.

Guernsey County

In Guernsey County, Wheeling Township, the Ohio Fuel Gas Co.'s No. 2-4,923 C. C. Wilson, Section 11, is credited with 45 bbls. initial, the pay sand being found from 3,466-75 feet. Same company is drilling No. 3-5,012 W. J. Alloway, Section 1, and made a location for No. 2-5,040 Simon Umstatt, Section 2. East Ohio Gas Co. made locations for No. 2 John A. Baird; No. 5 E. C. Quillan, and No. 8 Charles A. Amanda Gray, all in Section 11, same township. J. T. Watson and others made a location on the W. G. Walters, Section 22, Liberty Township.

In Belmont County, Wayne Township, S. Kinney and others' No. 2 Sam Kinney, Section 14, reported good for 3 bbls. from the Keener sand at 1,350-77 feet.

In Morgan County, Marion Township,

(Continued on Page 227)

OWENSBORO SHUTDOWN NEARS END AFTER THREE MONTHS' INACTIVITY

By Whit
Staff Correspondent, Kentucky-Tennessee

OWENSBORO, Ky., Mar. 10.—The 90-day shut-down in development work in the Tri-County Field of western Kentucky is practically at a close as the agreement expires on March 15, unless operators decide to continue it indefinitely. Many of the operators from outside are back in Owensboro making ready for a heavy drive of operations and for that reason work will no doubt be started in a brisk way. Roads are not in very good condition for the moving of material, but a week of sunshine will help along.

Quite a few completions are reported from various parts of the field, indicating operators are anxious to get started as they have lost almost three months, although the producing leases have been well taken care of and the decline in production is not so heavy as was first suspected according to the reports of the well owners. For the past couple of months the weather conditions have been bad for field operations and the shutdown movement came just at the right season of the year.

Ohio County Completions

In the Friendship Church area of Ohio County, H. L. Ogle and others' Nos. 23, 24, 25 and 26, on the Pate Royal farm, show initial production of 20, 25, 30 and 30 bbls., respectively. This has been a fairly productive lease. In the same vicinity, James C. Ellis and others' No. 5 on the Royal heirs farm of 100 acres, pumped 8 bbls. initial, while No. 4 produced 15 bbls.

Louisville Gas & Electric Co.'s No. 1 E. M. Royal, Friendship Church area, is reported at 10 bbls. In the same field, Rhodes and others' No. 1 Will Hartford farm, is rated good for 1,500,000 feet of gas.

George Randolph and others' test on the W. G. Kirk 120 acres, is said to show 5 bbls., and may lead up to a new pool.

The Kemrow-Cumberland Petroleum Co.'s No. 5 on the Joe Maden farm, in the Sunnydale area, pumped 15 bbls. in 24 hours.

Hupp, Duff and others' No. 4 on the J. A. Stewart farm, in the Buford Pool, in the western part of the county, also directly west of the old Ambrose-Weller Pool, is reported dry, but like all other pools, a dry hole can be found between four producing wells and not condemn the territory, which is the history of Kentucky.

H. C. Smith Co. drilled a duster in No. 1 on the Clay Edwards farm, in the northern part of the county.

Nina Rea White and others' test on the Linas Howard, 3 miles southeast of Whitesville, came in a duster. James C. Ellis and others' No. 6 W. P. Howard farm, same area, and 200 feet from the south line and 1,000 feet from the east line of the farm, produced 15 bbls. initial.

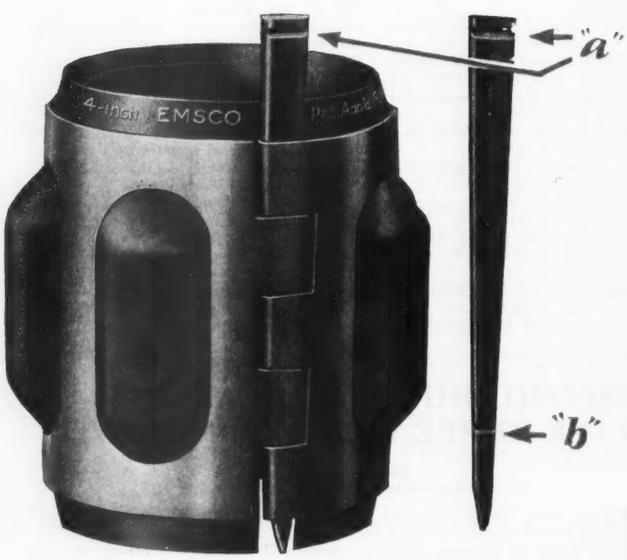
In the Deanfield area, Snowden-McSweeney Co.'s No. 8, 1,600 feet from the south line and 200 feet from the west line of the Ada Kelley 69 acres, pumped 5 bbls.

Fred Hupp and others' No. 1 Mertle Brown farm, is reported good for 15 bbls. initial in the Jones sand.

T. P. Royal and others' No. 13 on the T. P. Royal 60 acres, in the Friendship Church Pool, pumped 35 bbls. from the

(Continued on Page 227)

The Emsco free-circulation PROTECTOR



embodies all the desirable features of previous types

plus

new and improved features *exclusively* EMSCO

When the Emsco Protector is placed on the pipe, the steel cage surrounding the tough rubber body is drawn together by a tapered steel pin. Pin and slots are so designed that the pressure on pipe, as pin is driven into place, is precisely the same at top and bottom and throughout the intervening space on protector, and evenly distributed around the pipe. The pin is provided with a slot ("a") which fits into a corresponding rib in the steel cage, automatically locking the protector on the pipe when completely installed as in Fig. 2 ("aa"). Another slot ("b") is provided in the pin for breaking off when installed.

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An Engineering Achievement In Pipe Protection

Fig. 1

The Emsco *Free-Circulation* Protector embodies *all the advantages desired in appliances of this type.*

While providing positive protection to the drill pipe, casing, tool joints and collars, *it insures free circulation of mud and fluid at all times, due to the exclusive Emsco design which provides an area of circulation space* (see Fig. 1) *that by actual measure is greater than the total volume of fluid forced through the rotary hose.*

This extraordinary free-circulation area *insures against closing up or restricting the space between drill pipe and casing, and causing a suction in the hole, or pulling the fluid out of the hole when coming out.*

The Emsco Protector can easily be installed in from 30 to 35 seconds, *and cannot snap off the pipe under any circumstances.*

It obtains the tightest, firmest grip possible to obtain by mechanical means (see Fig. 2) *and cannot slip, pile or overlap when in the hole under any degree of pressure.*

Emsco Protectors withstand more abuse *and last from four to ten times longer under the same service conditions.*

Emsco rubbers are made flat (see Fig. 3), in shallow molds, under 200-tons hydraulic pressure by direct rams, from the finest materials; *and, therefore, are not subjected to expansion strains at any time during process of manufacture, while being installed, or when in service*—a feature which prevents serious damage or destruction by cuts or tears.

Their efficiency cannot be impaired until *all the tough rubber offsets are entirely* destroyed.

Emsco tough rubber "bumpers" are an integral part of the flat rubber body and *provide* extraordinary resiliency and cushioning effect on the pipe.

Fig. 2

Emsco Protectors cannot be destroyed or expanded by circulating oil in the hole due to the new and exclusive Emsco method of construction and compounding of rubber.

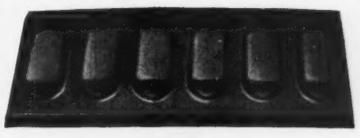

Fig. 3

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Our new descriptive circular contains complete information regarding the design, construction, advantages and performance of Emsco Free-Circulation Protectors. Companies and individuals are urged to write for this circular at once and learn about this greatest of all protectors.

Southeast Ohio Sand Thought Defined

Still Room for Many Locations Within Limits of Deep Territory. One Fair Well Completed During Week

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Mar. 10.—Development work in the eastern fields during the past week was not fruitful of any large wells. Except in the deep sand territory in southeast Ohio there is little chance for anything better than light pumpers. The deep territory is thought to be defined, but there is still room for many locations inside of defined limits. Six or more counties have been for years furnishing most of the new production in the eastern fields.

The yield of new production in the West Virginia, southeast Ohio and southwest Pennsylvania fields during February was a little more than 1,000 bbls. in excess of the record for January.

SOUTHEAST OHIO

The southeast Ohio deep sand territory furnished all the better than average producers, one a very fair well.

In the NW Section 3, Clay district, Muskingum County, B. B. Putnam and others completed and shot in the Clinton sand a test on the William McDaniel farm. It produced 110 bbls. the first 24 hours from a total depth of 3,503 feet.

In the NW Section 8, Fallsbury Township, Licking County, the Emerald Petroleum Co. completed No. 4 on the Sarah J. Little farm. The first 24 hours after completed and shot in the Clinton it produced 65 bbls.

At the present time Muskingum County is completing a number of test wells. In the SW Section 17, Newton Township, the Melick Oil Co.'s test on the W. S. Ford farm is a gasser in the Clinton sand. In the SW Section 11, Perry Township, the Wittmer Oil & Gas Properties completed a Clinton sand test on the I. B. Baker farm. It is an 8-bbl. pumper. In the NE Section 7, Richland Township, the Atha Oil Co. has a 4-bbl. pumper in the Clinton sand. In the NE Section 23, Union Township, the Atha Oil Co.'s test on the Maude Shepherd farm is a duster in the Berea grit. In the SE Section 15, Perry Township, C. E. Taylor had the same luck on the Fred, Ella and Mary Smitley farm.

Hocking County

In the SE Section 29, Ward Township, Hocking County, the Preston Oil Co. completed and shot in the Clinton sand No. 1,387 on the Sunday Creek Coal Co.'s tract. It produced 50 bbls. the first 24 hours. In the NE Section 3, Clay Township, Muskingum County, the Buckeye Supply Co. has a duster in the Clinton sand on the Timothy Pride farm.

In Section 29, Independence Township, Washington County, I. Binnegar completed a second test on the Margaret Binnegar farm. It is a duster in the Squaw sand. In Section 10, Franklin Township, C. W. Pash & Co. completed a test on the Robert Malett farm. It is dry in the Salt sand. In Section 20, Lawrence Township, S. E. Edwards & Co. have started to drill on the John Bush farm.

In the SW Section 27, Hardy district, Holmes County, the East Ohio Gas Co. completed and shot in the Clinton sand No. 3 on the S. H. Sterling farm. It produced 20 bbls. natural the first 24 hours and 165 bbls. the first 24 hours after shot. In Section 11, Franklin Township, Licking County, A. W. Patten & Co. completed in Berea grit No. 3 on the Bert Watson farm. It is a 3-bbl. pumper.

In the NE Section 28, Aurelius Township, Washington County, Jerry Buckley completed a test on the Clarence Wagner farm, a very light pumper in the Berea grit. In the SE Section 4, Vermillion Township, Ashland County, the Great Lakes Oil Co. has a 4-bbl. pumper in the same formation on the Doctor Moffett farm.

In Harrison Township, Perry County, the Ohio Fuel Gas Co. has rigs on the F. C. Moore, Arthur Porter and Orla Moore farm. In Clary Township, Muskingum County, Crowley, Carr & Co. are drilling on the Nelson McCoy farms. In York Township, Morgan County, the Ohio Fuel Gas Co. has a 4-bbl. pumper on the Frank Cosgrave farm.

In Section 1, Center Township, Monroe County, the Henry Oil Co. has a duster at a second test on the Henry Friday farm. In Salem Township, the Wittmer Oil & Gas Properties Co. is drilling on the Burkholter farm. In Section 30, Clayton Township, Perry County, the Wehrle Co. had a duster at a second test on the I. E. Wright farm. In Jackson Township, J. Rider & Co. had the same luck on the Frank Metzger farm.

Monroe and Vinton Counties

In Franklin Township, Vinton County, Robinson & Ball completed a light gasser in the Berea grit on the Theodore Ursinger farm. At Bolin Mill, Section 3, Knox Township, Vinton County, the Hope Construction & Refining Co.'s second test on the Daniel Dass farm is a very light pumper in the Berea grit.

In the NW Section 3, Clay Township, Muskingum County, William Cline & Co. completed and shot in the Clinton sand No. 4 on the Robinson Pottery Co.'s property. It produced 75 bbls. the first 24 hours.

WEST VIRGINIA

Completions in the West Virginia fields showed an uncomfortable number of dry holes. Wood County had more than the usual number. In Williams district, Beeson & Athey's test on the J. B. Henderson farm is dry in all sands. In the same district, Riggs & McCline have a duster on the J. B. Henderson heirs' farm. In the same district, Athey Brothers have a duster in all sands on the F. A. Athey farm. In Center district, Gilmer County, the Carnegie Natural Gas Co.'s test on the Mary A. Stump farm is a gasser in the Blue Monday sand. In Mannington district, Marion County, D. C. Moore & Co.'s test on the Nora Hibbs farm is dry in all sands.

In Mannington district, Marion County, the Clifton Oil & Gas Co. is building a rig on the H. L. Campbell heirs' farm. In Church district, Wetzel County, Moorhead & Butcher have started to drill on the W. J. Troy farm. In Sheridan district, Calhoun County, the Richter Oil Co. is building a rig on the Elmer P. Haught farm. In Grant district, Ritchie County, H. N. Rinehart has started to drill on the Daniel Donley farm. In the same district, the Hope Natural Gas Co. has a rig up on the Lavina McFarland farm.

Wood County

In Williams district, Wood County, Gordon & Ekas are rigging up on the Elizabeth Richardson farm. In Union district, Charles Smith is rigging up on the Blaine Casteel farm. In the same district, the Mills Oil Co. is rigging up on the D. P. Dunham farm. In Grant district, Moyer & Co. have rig material at a location on the James W. Webb farm. In Smithfield district, Roane County, the Fred Oil & Gas Co. has a rig up on the A. T. Ferrel farm. In the same district, the United Fuel Gas Co. is building a rig on the W. L. Deverick farm. In Spencer district, Paul Weekly & Co. have made a location on J. C. Epling farm. In Sherman district, Calhoun County, the Mid-Penn Oil Co. is rigging up on the Chess Poling farm. In the same district, Godfrey L. Cabot has made four locations. In the same district, L. F. Bickle has started to drill on J. G. Waet farm. In Murphy district, Ritchie County, A. H. Jackson is rigging up on the Addison Riddle farm.

In Geary district, Roane County, the Virginian Gasoline & Oil Co. completed in the Big Injun sand No. 7 on the John Hunt farm. It is a 5-bbl. pumper. In Henry district, Clay County, the same company drilled a test on the Mary D. Henshaw farm through the same formation and it is a duster.

Harrison County

In Ten Mile district, Harrison County, the Jacobs Run Oil & Gas Co. has a very light pumper on A. P. N. Flanagan 54 acres. In Paw Paw district, Marion County, the Owens Bottle & Machine Co. has a gasser in the Gantz sand on the J. E. and A. Michaels farm.

In Paw Paw district, Marion County, the Owens Bottle & Machine Co. has shut down at 2,864 feet on the Edgar Fox farm. In the same district, the Carnegie Natural Gas Co. has shut down at 2,937 feet on Charlotte Price farm. The Owens Bottle & Machine Co. has a rig up on the O. A. Keeforver farm.

In Ravenwood district, Jackson County, the Capitol Oil Co.'s test on the Arthur Gray farm had declined to 10 bbls. and it was decided to give it a shot which increased its production to 40 bbls. In Jefferson district, Lincoln County, the United Fuel Gas Co.'s No. 3,881 on the Horse Creek Land & Mining Co.'s tract is a gasser in the Berea grit. On the same tract, the same company has a gasser in the same formation at 3,908 feet. In the same district, the Woodall Gas Co. is drilling tests on the John A. Lambert and R. L. Stowers farms.

In Washington district, Boone County, the Owens Bottle & Machine Co. has a gasser at No. 3 on the W. S. Hatfield farm. In the same district, the Pond Fork Oil & Gas Co. has a gasser at No. 9 on the Crane Real Estate Co.'s farm.

In Ten Mile district, Harrison County, J. R. Dennison & Co. completed a second test on the Allen Varner heirs' farm. It has a show of oil in the Gordon sand. In Meade district, Tyler County, the American Oil Co. has a gasser at No. 3 on the John McCoy farm.

Marshall County

In Liberty district, Marshall County, the Manufacturers Light & Heat Co. has a gasser at No. 3,394 on the Marshall County Bank's property. In the same district, the same company has a gasser in the Gordon sand at No. 3,403 on the R. R. and A. Chambers farm.

In Eagle district, Harrison County, the Delaware Gas Co. has a Fifth sand gasser on the John A. Davis farm. In New Milton district, Doddridge County, the Hope Construction & Refining Co. has drilled down an old well on the J. M. Gribble farm. It is a 2-bbl. pumper in the lower formation.

In Malden district, Kanawha County, West Virginia, the Ten Mile Oil & Gas Co. has a gasser on the H. C. Dickinson farm good for 1,200,000 feet. In Louden district, the Allegheny Gas Corp. has a gasser at No. 4 on the Laidley-Bradford farm.

In Crook district, Boone County, the Martha Oil & Gas Co. has a gasser on the R. L. Price, Sr., farm. In the same district the Yawkey Oil & Gas Co. has a gasser at No. 13 on the Pond Fork Coal Co.'s property. In Sherman district, G. L. Cabot has completed a gasser on the B. D. Banks farm.

In Scott district, Putnam County, the Calli Oil & Gas Co.'s Nos. 2 and 3 on the John Tormay farm are gassers. In Stonewall district, Wayne County, the Wayne United Gas Co. completed No. 33 on its own tract as a gasser. The same company's No. 29 on the same property is a gasser. In Harvey district, Mingo County, the Huntington-Clarksburg has a gasser at a test on the Henry J. Evans farm.

In Town district, Raleigh County, Godfrey L. Cabot's test on the Beaver Coal Co.'s farm is a duster. It has been abandoned. In March Fork district, same county, the United Fuel Gas Co. is cementing a cave at No. 4,026 on the Adward J. Berwinde farm.

Boone County

In Scott district, Boone County, the Mountain State Gas Co. has a gasser in the Berea grit on the M. E. Holstein farm. In the same district the same company has a gasser on the F. Prichard and C. Hill, Jr., farm. In Duval district, Lincoln County, the Cameron Oil & Gas Co. has been served with an injunction at its test on the Horse Creek Land & Coal Co.'s tract.

On Indian Creek, Elk district, Kanawha County, the United Fuel Gas Co. has completed in the Weir sand No. 3,966 on the Numa Black Coal Co. tract. It is a gasser good for 300,000 feet. On Trace Fork, DeKalb district, Gilmer County, the White Pine Oil Co. completed a test on the H. Gainer farm, showing for a 10-bbl. pumper.

In Cabin Creek district, Kanawha County, the United Fuel Gas Co. has a light gasser on the Paint Creek Land & Coal Co.'s tract. In the same district the same company's No. 3,932 on the Sunday Creek Coal Co.'s farm is a gasser good for 750,000 feet. One and one-half miles east of the South Penn Oil Co.'s test on the Morris farm, the United Fuel Gas Co. has a gasser good for 1,500,000 feet at No. 3,967 on the Numa Black Coal Co.'s tract.

On Green Branch of Twelve Pole Creek, Harvey district, Mingo County, the Wayne United Fuel Gas Co. completed No. 30 on the A. W. Wilson farm. It is a gasser in the Maxon sand good for 1,500,000 feet. In Lincoln district, Wayne County, the same company has a gasser on the same tract.

Increased Production

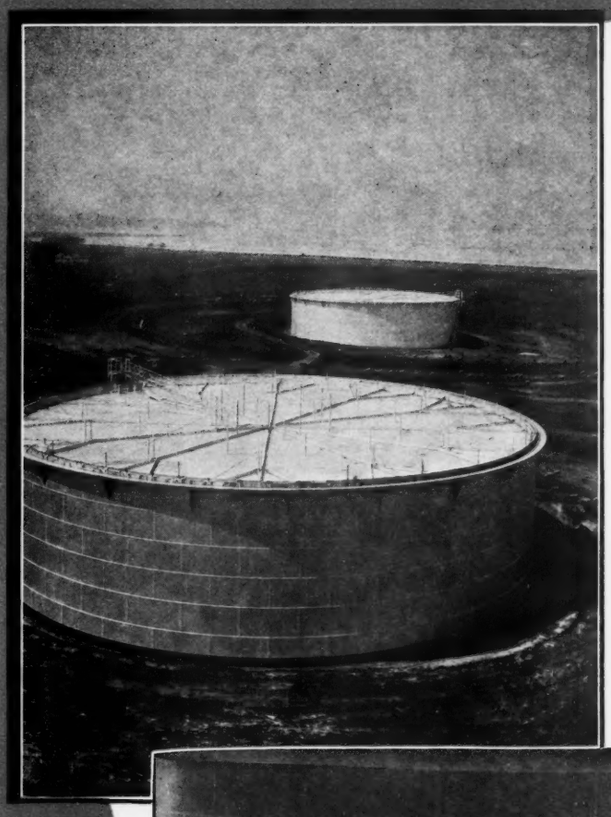
In Smithfield district, Roane County, the Roane County Oil Co. has cleaned out and shot an old well on the W. F. and J. H. Goshorn heirs' farm, increasing its production from 1½ bbls. to 9 bbls. In Clay district, Monongalia County, the Philadelphia Oil Co. is building a rig on a location on the W. L. Keck farm on Days Run. Several years ago the United Fuel Gas Co. drilled a test on the James Phillips farm into the Big Injun sand and got a gasser. Now it is drilling it to the lower sands.

Tyler County

In Union district, Tyler County, Morgan Brothers are rigging up on the J. B. Dancer farm. In Cabin Creek district, Kanawha County, the United Fuel Gas Co. is drilling seven wells and building rigs for four. In the same district Godfrey L. Cabot has started to drill on the Quincy Coal Co.'s property. In Washington district, same county, the Cambridge Gas Co. has made a location on the Walter A. Compton farm. In Scott Township, Boone County, the Owens Bottle & Machine Co. is drilling on the S. M. Wheeler and M. A. Vanderlinde farms. In Sherman district, same county, the Pure Oil Co. has a rig up on the L.R.&P. tract.

(Continued on Page 240)

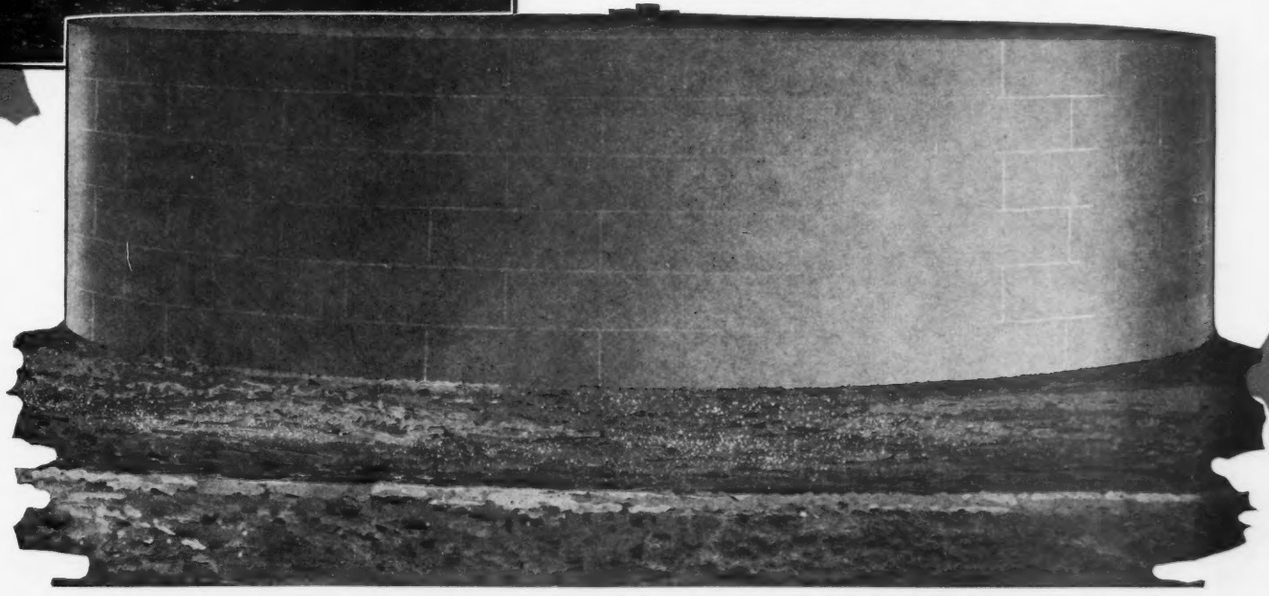
Pay the Cost of
TANK RE-ROOFING
out of Evaporation Savings



When you have to replace old tank roofs why not take advantage of the opportunity to install Wiggins Roofs? Put Wiggins Floating Roofs on those which are worked regularly and Wiggins Breather Roofs on standing storage tanks.

Both types make sufficient evaporation savings to pay their entire cost in a short time. In addition, they eliminate the fire hazard from tanks.

Left: 80,000 bbl. tank at San Pablo re-roofed with Wiggins Floating Roof. Below: Wiggins Breather Roof put on an old 114½-ft. dia. refinery tank at Toledo, O.



WIGGINS ROOFS
Stop EVAPORATION LOSSES

Turn the page for Details

WIGGINS ROOFS installed on new tanks—or on existing tanks

Wiggins Floating Roofs

Working Tanks should be equipped with Wiggins Floating Roofs to stop filling and emptying losses. It is often profitable to remove the old roofs on tanks and replace them with Wiggins Floating Roofs, even though the old covers seem to be in fair shape.

A working tank, for instance, handling 10,000 bbls. per day of average

Annual Savings With Wiggins Roofs

WORKING TANKS

Bbls. Pumped Daily	Kind of Oil	Cone Roof Tank Loss	Floating Roof Loss	Saving in Dollars
5,000	Gasoline	3,250-4,855	155	$13,000-$19,800
10,000	Gasoline	6,500-9,710	300	26,000- 39,600
5,000	Crude	1,810-2,310	110	5,950- 7,700
10,000	Crude	3,000-4,500	150	9,975- 15,225

STANDING STORAGE

Tank Dia. in Ft.	Kind of Oil	Cone Roof Tank Loss	Breather Roof Loss	Saving in Dollars
120	Gasoline	950-1200	20-50	$4,368
60	Gasoline	200- 300	10-25	966
120	Crude	500- 600	10-25	1,855
90	Crude	300- 350	10-25	1,067

Mid-Continent crude will lose 3,000 to 4,500 bbls. per year if equipped with an ordinary cone roof, and not more than 150 bbls. a year if this roof is replaced by a Wiggins Floating Roof. At this rate, the Wiggins Roof on a 90-ft. diameter tank will pay its entire cost out of savings in nine months. It takes only four months to save the difference between a cone roof and a Floating Roof.

These savings are effected by the practical elimination of filling and emptying losses. The roof rides on the surface of the oil or refined product at all levels, without space for air between it and the oil. At the tank shell a seal with a long, sliding contact effectively seals the space between roof and tank sides.

Wiggins Floating Roofs also eliminate fire hazard and cut down corrosion from sour oil. Send coupon for booklet describing fire tests by prominent companies and oil evaporation data.

Wiggins Breather Roofs

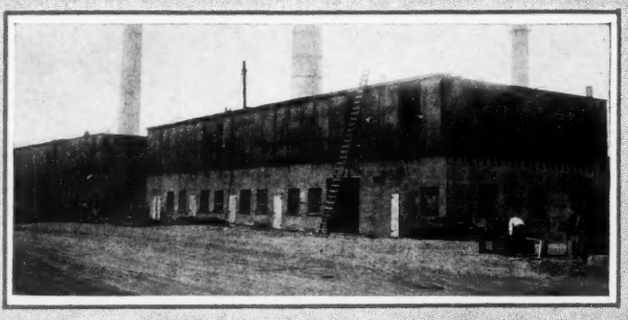
Tanks for Standing Storage can be similarly protected from evaporation and fire hazard by equipping new tanks and re-roofing existing tanks with Wiggins Breather Roofs. They flex up and down with expansion and contraction in vapor volume caused by temperature changes. No vapor is vented out under normal conditions, and no air is drawn in to become saturated and forced out again.

For example, a Wiggins Breather Roof on a 55,000 bbl. tank storing motor fuel gasoline practically eliminates a loss of $3,000 to $4,000 worth of gasoline in a year's time. In addition, it prevents a reduction of gravity of the entire tank of gasoline. As with the Floating type, Breather Roofs save their cost in a few months.

Low pitch steel cone roofs in good condition can be converted into Wiggins Breather Roofs, utilizing the present material. In this way it is possible to take full advantage of Breather Roof savings at only a small cost. When requesting quotations on converting cone roofs to Breathers, be sure to give dimensions of tank, pitch of roof and all information possible regarding the condition of the structure.

In Universal Use

Both types of Wiggins Roofs are in use all over the world, by both large and small oil companies. We will be glad to give you estimates on the cost of replacing your cone roofs with Wiggins Roofs. The coupon is for your convenience in requesting them.



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Other Products

The Hortonsphere is a spherical tank for storing light gasoline, which requires 10 or 25 pounds pressure to prevent excessive evaporation.

We also make field erected tanks for all requirements, from 500 barrels up, Horton elevated steel storage tanks for general service and fire protection. Agitators, condenser boxes, stills, steel smokestacks and refinery plate equipment. The coupon below is for your convenience in requesting booklets describing our products or quotations.

CHICAGO BRIDGE & IRON WORKS

Dallas	3341 Magnolia Bldg.	Detroit	1514 Lafayette Bldg.
New York	3147 Hudson Terminal Bldg.	Philadelphia	1615 Jefferson Bldg.
Cleveland	2204 Union Trust Bldg.	San Francisco	1054 Rialto Bldg.
Chicago	2128 Old Colony Bldg.	Boston	1517 Consolidated Gas Bldg.

Chicago Bridge & Iron Works,
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Please send (information) (a quotation) on .....

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WIGGINS ROOFS
Stop EVAPORATION LOSSES

Apparent Failure in Ector County Pool

Penn Pool by Far the Most Active District in the Permian Basin. Best Well of Field in Pecos Valley Pool

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Mar. 10.—An apparent failure in the Penn Pool, Ector County, was no doubt the keenest disappointment in West Texas during the week, and possibly the most engrossing feature, as Llano Oil Co.'s No. 1 Hogan in the NW cor. of Section 7, Block 44, Township 3s, T.&P. Survey, a mile east of production in the pool, was thought to be a sure extensioner to the southeast.

The test encountered sulphur water at 3,838 feet and drilled to a total depth of 3,843 feet where it will probably be abandoned. The water was still rising in the hole this morning, 1,500 feet having already accumulated. Elevation of this test is 2,914 feet, and lime was topped at 3,349 feet.

The next well due for completion in this new pool is Landreth Production Corp.'s No. 2-T University, 990 feet from the north and 330 feet from the east of Section 3, Block 35. Six and five-eighths inch casing is now being run at 3,328 feet in lime. The test topped the salt at 1,210 feet.

There are at the present writing 29 locations, drilling wells and other active locations in the pool, with no semblance of a shutdown or curtailment of activities or production, and it is by far the most active and interesting area of the Permian Basin, taking the place of Howard and Glasscock Counties, whose pools have dominated in activity for the past few months, but are now decreasing rapidly in interest and production work.

Stringing Humble Line

Added to the production activity in the Penn Pool is the pipe line activity of the Humble Pipe Line Co., which is stringing 6-inch pipe for its 13 miles of welded line from the pool to a point in Crane County on its Winkler County-McCamey line.

The Magnolia Pipe Line Co. started running oil from the Penn Pool the morning of March 6, through its 6-inch connecting line to its Winkler County-Midland and De Leon trunk line. Cosden wells will furnish crude for this line, the oil to be carried as far as Big Spring where it will be run to Cosden tanks for the Cosden Oil Co.'s refinery at that place.

Burford Oil Co.'s 4-inch line has been carrying oil west to the Winkler County Field and the Burford refinery at Pecos since March 1, and Humble's line will be the fourth line in the field, the first one having been built by the Gulf Production Co. to take oil from the Penn-Humble leases and the first two wells in the field. This was but a short 2-inch line connecting with Gulf Pipe Line Co.'s trunk line from Winkler County by way of Midland to Ranger.

Another feature of the week in the Permian Basin was Atlantic Oil Co.'s No. 1 Shearer, in the SW cor. of Section 107, Block 10, H.&G.N. Survey, offsetting Cranfill & Reynolds' No. 1 Masterson. This well, the second in this new pool, encountered a sandy lime pay at 1,438-45 feet and headed every five hours, making 20 bbls. of oil per head, the oil testing 30.0. It was estimated good for from 125 to 150 bbls. in 24 hours.

The Masterson well is making around 30 bbls. per day, 10 per cent water, and topped the pay at 1,240 feet, approximately 200 feet higher than the second well. Elevation of the Atlantic well is 2,423 feet while that of the first well, the Masterson well, was 2,422 feet.

One dry hole has been drilled in this area since the No. 1 Masterson was completed. Cranfill & Reynolds abandoned their No. 1-B Masterson last week in Section 105 to the south of the discovery, thereby limiting production in that direction.

Pecos Valley Pool

The Pecos Valley Pool has come into the limelight since the completion of Black & Dittman's No. 1 Pecos Valley last week as the best well in the field, averaging around 250 bbls. per day for the week from a total depth of 1,533 feet. Buell & Hagan are reported contemplating three wells in Sections 21 and 22, Block 10, H.&G.N., and in Section 34, Block 3, H.&T.C. Survey, putting this pool into the active class, instead of the passive, as it has been since its discovery in 1929.

Southern Crude Oil Co.'s No. 1 McKenzie in the NW part of Section 10, Block 604, 3 miles south of the Taylor-Link Pool, Pecos County, is preparing to plug back to complete as a gasser, after encountering sulphur water at 2,045 feet and drilling to a total depth of 2,415 feet.

Continental Oil Co.'s No. 1 Miller in Section 162, Block 29, W.&N. Survey, Howard County, 4 miles east of the Phillips-Coffee Pool, and 2 miles southwest of the Roberts Pool, almost due south of the Texon-Settles Pool, is an interesting test as an offset to the small well drilled in by the Marland-Texon oil companies. It will extend the limits of the field another one-half mile if it proves a producer.

The potential of the 3,000 and 2,000-foot pay levels in the Howard-Glasscock County Pool from March 1 to April 1, 1930, is 56,544 bbls. per day, and the allowable production per day is 25,436 bbls., 17,140 bbls. of this amount coming from the 3,000-foot level, and 39,404 bbls. coming from the 2,200-foot level.

Production figures of the Hendricks Pool, Winkler County, show a drop of 193,494 bbls. in February to a total monthly production of 2,545,765 bbls.

Edwards Plateau Region

One of the most interesting tests of the Edwards Plateau region in West Texas is to be drilled by the Phillips Petroleum Co. in Section 25, C.C.S.D.& R.G.N.G. Survey in the extreme southern part of Sutton County. The company has erected one of the heaviest of 136-foot rotary derricks, and will install the heaviest rotary equipment for drilling to an indefinite depth, probably going deeper than any other test drilled in this part of the district. It may be carried even below the deep pay horizon found in the Big Lake Pool, Reagan County.

Shell Petroleum Corp.'s No. 1 Owens, the deep test in the Shipley Pool, Ward County, is now drilling at 4,075 feet in lime, and had produced 3,070 bbls. of oil up to March 5. The last increase in oil was found at 3,023-32 feet, helping the well to swab about 35 bbls. per day.

Penn and Atlantic Oil Producing Co.'s No. 2 Bennett, in Section 16, Block 34, H.&T.C. Survey, was plugged back to 2,625 feet from 2,630 feet and is swabbing 15 bbls. per day, not showing for as good a well as No. 1 Bennett (Pecos Mercantile Co.), the discovery of this area, in Ward County.

WEST TEXAS PRODUCTION
Week ending March 8

County—	Wells	Prod.
Andrews	1	195
Crane County	335	36,616
Crockett County	48	1,775
Fisher County	7	846
Ector County	8	480
Garza County	5	45
Glasscock and Howard	492	37,500
Jones County	73	1,411
Loving County	20	1,360
Mitchell County	143	2,370
Pecos County	421	140,290
Reagan County	253	16,835
Runnels County	3	16
Scurry County	5	15
Upton County	253	9,115
Ward County	24	1,515
Winkler County	607	92,040
Total this week	2,698	342,424
Total last week	2,685	342,895
Difference	13	471

Fisher County

Cranfill & Reynolds have made a gas test on their producing wells in Fisher County, the wells showing a gasoline content from 2 to 4.2 gallons per 1,000 feet. Their No. 1 Brown was the richest producer, averaging the latter amount, but gassing only 1,000 feet per day. The total gas production per day from the wells is 153,000 feet. Since the Humble Pipe Line Co. prorated Jones and Fisher Counties to two-thirds of their production per day, Cranfill & Reynolds have started erecting two 80,000-bbl. tanks to take the production from their wells which Humble will not take, for they report that their wells have to be produced to capacity to prevent ruining them.

One of the best wells yet drilled in the Taylor-Link Pool, Pecos County, is Skelly Oil Co.'s No. 2 University (Bowser) in Section 31, Block 16. It topped the pay at 964 feet and was shut down at 972 feet flowing 25 bbls. in 20 minutes. In 24 hours, ending 7 a.m. March 9 it flowed 1,100 bbls. and went dead. After cleaning out the swab was run once and the well flowed 252 bbls. in two and one-half hours. It is now flowing at the rate of 55 bbls. per hour.

Several other wells in this pool have come in like lions, but soon slumped off, some of them being deepened and benefited, while others were allowed to flow awhile, and later put on pump. Slumping off rapidly in production has been a characteristic of this shallow producing field, and many disappointments have been completed.

PIPE LINE RUNS
February 19 to February 25, 1930
Runs Through Trunk Lines

	Last period
Atlantic P. L. Co., Port Arthur	27,000
Gulf P. L. Co. to coast, via Ranger	45,102
Humble P. L. Co., Comyn, Tex.	36,826
Humble P. L. Co., Ingleside	32,914
Illinois P. L. Co., Del Rio, Tex.	46,986
Magnolia P. L. Co., De Leon, Tex.	19,670
Pasotex P. L. Co., El Paso, Tex.	13,136
Shell P. L. Co. to Healdton, Okla.	30,313
Shell P. L. Co. to Houston, Tex.	20,652
The Texas Company, Houston, Tex.	21,914
Total	294,513
Tank Car Shipment	
Big Spring P. L. Co., Big Spring	....
Humble O. & R. Co., McCamey	171
Landreth Prod. Corp., Crossett	....
Reagan County Pur. Co., McCamey	....
Thomas & Brann, Grant City	350
Orient Co., McCamey	100
American Pet. Co., Pyote	....
Southern Crude O. P. Co., Wickett	18,858
Total	19,479
Runs to West Texas Refineries	
Bluebonnett Ref. Co., Wickett	3,160
Burford Ref. Co., Pecos	3,721
Col.-Tex. Ref. Co., Colorado	7,000
Cosden Ref. Co., Big Spring	8,417
Great Western Ref. Co., Big Spring	3,625
Humble Oil & Ref. Co., McCamey	9,180
Mid.-Tex. Ref. Co., Midland	....
Tonkawa Ref. Co., Pyote	2,045
Big Spring Ref. Co., Big Spring	679
Richardson Ref. Co., Big Spring	4,356
Wickett Ref. Co., Pyote, Tex.	200
Total	42,383

Summary

	Last period	This period
Pipe line runs through trunk lines	285,045	294,513
Tank car shipments	20,315	19,479
Runs to West Texas Refineries	42,004	42,383
Total daily distribution	347,364	356,375
Total daily production	338,643	340,417
Daily average from storage	8,721	15,958

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended March 10

Company, farm and location—	Remarks—
ANDREWS COUNTY	
Deep Rock Oil Co. et al's No. 1 Mathis, 990 ft. from S and W. Sec. 4, Blk. A-46, Public School Land	Spudding 150 ft.
Deep Rock Oil Co.'s No. 1 Miles, 990 ft. S, 1,650 ft. E of NW cor. Sec. 22, Blk. A-46, School Land	Drlg. 480 ft.
Deep Rock Oil Co.'s No. 1 Ogden, 2,310 ft. E, 330 ft. S, Sec. 6, Blk. A-46, Public School Land	Top pay 4,345 ft.; top lime 4,050 ft.; averaging 200 bbls. per day; total depth 4,428 ft.; est. 200 ft. water in hole 4,414-28 ft.
Fuhrman Pet. Corp.'s No. 1 Ford, 440 ft. from S and 2,200 ft. from W of Sec. 16, Blk. A-43, Public School Land	Moving in material.
Deep Rock Oil Co. et al's No. 1 King, 330 ft. from N and 2,310 ft. from E, Sec. 11, School Blk. A-46	Drlg. 885 ft.
BORDEN COUNTY	
Moncrief et al's No. 1 Munger, 1,980 ft. from N and E, Sec. 15, Blk. 31, Twp. 4-N, T.&P.R.R. Sur.	Drlg. 2,982 ft.
Phillips et al's No. 1 Goode, 330 ft. N and E of SW cor. SE of Sec. 46, Blk. 33, Twp. 4n, T.&P.R.R. Sur.	Drlg. 100 ft.
Texas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur.	Top salt 1,080 ft.; shut down 2,540 ft.
BREWSTER COUNTY	
E. W. Bateman et al's No. 2 Nevill, 2,000 ft. S and W line of Sec. 62, Blk. 13, G.H.&S.A.R.R. Sur.	Shut down 3,002 ft.
Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur.	Fishing 1,935 ft.

(Continued on Page 169)

WEST TEXAS COMPLETIONS

Week ending March 8

Loving County

Humble Oil & Refining Co.'s No. 1 Kloh-Rumsey, 2,640 feet north and west of Section 35, Township 2, T.&P.R.R. Survey, was dry and abandoned at 4,085 feet.

Glasscock County

Simms Oil Co.'s No. 2 Coffee, Section 22, Block 33, Township 2-S, had an initial production of 230 bbls. in 12 hours at 2,175-85 feet.

Kent County

Atlantic Oil Producing Co. and others' No. 1 Wallace was dry and abandoned at 3,003 feet.

Mitchell County

Gibson & Johnson's No. 1 Scott, Section 36, Block 17, S.P.R.R. Survey, was dry and abandoned at 856 feet.

Howard County

Continental Oil Co.'s No. 7-C Chalk, Section 140, Block 29, W.&N.W.R.R. Survey, topped the pay at 1,819 feet, was drilled to a total depth of 1,843 feet and had an initial production of 60 bbls. Empire Gas & Fuel Co.'s No. 4 Clay, Section 127, Block 29, W.&N.W.R.R.

(Continued on Page 167)

Montague County Holds Attention

Two Tests Extend Production. Gray County Proration Is Encountering Difficulties. New Tests South of Granite Ridge

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Mar. 10.—Montague County continued to hold attention this week in the Wichita Falls district because of Bridwell Oil Co.'s No. 1 J. S. Dennis in the southern part of the F. Robertson Survey. Last week it encountered a sandy lime at 1,674-1,730 feet and a broken oil sand at 1,-730-43 feet, filling up 300 feet in two hours. It was deepened this week to a total depth of 1,746 feet and has been flowing 70 bbls. of oil per day, testing 29 gravity.

Another semiwildcat test of this county, brought in this week, is W. H. Godfrey's No. 1 Lemons, 720 feet from the south and west lines of the Lemons farm in the Samuel Little Survey. It encountered an oil sand at 897 feet and was shut down at 906 feet estimated good for 25 bbls. per day. Both of these tests extend production and will help in bringing the daily average production of the county to a higher level, and opening more acreage to possible production, stimulating activity in this county.

Gray County Proration

Gray County operators met at Pampa, Tex., to discuss proration of the flush pools in that area. It was admitted that the voluntary proration plan had in a measure failed, and a resolution was passed to ask the State Railroad Commission to take charge of the situation in the flush production areas of Gray, Carson and Hutchinson Counties. In Carson County it will include the McConnell Pool, in Hutchinson County the Pantex Pool, and in Gray County the Bowers and Marland-Finley Pool. In order to have the state commission step in it must be shown that oil and gas are being wasted.

Another meeting will be held March 14 at which time the operators will either approve or reject the plan which is to be formulated by a committee of 15 oil company representatives appointed for the purpose of studying the present situation and planning better means of proration.

The Texas Company announced it would buy and pay for 100 per cent runs, taking effect 7 a. m., March 6, lifting proration and reverting to the status prior to February 15 when it announced it would run only 50 per cent and pay for that amount, and run 50 per cent to storage and charge a storage fee of 3 cents per barrel per month. All oil accumulated under the proration rule will be purchased by the company if the operators desire to sell or it will deliver it to any designated place, and will absorb all accumulated storage charges. The Sinclair Crude Oil Purchasing Co. and Humble Pipe Line Co. may soon follow The Texas Company in making this change in regard to purchases in the Panhandle and Wichita Falls districts.

South of Granite Ridge

The south side of the granite ridge in Carson and Gray Counties is now looked upon as a possible new source of oil since the discovery well of Empire Gas & Fuel Co.'s No. 1 Fields, west of White Deer in Section 13, Carson County, came in as a 2,165-bbl. well from a total depth of 3,232 feet after topping the pay at 3,220 feet, and many tests will no doubt be sunk. Offsets are now being prepared to drill, and activity in the vicinity of this well will probably outrank other areas in the Panhandle district for some time. The Empire company is now running oil through its 4-inch line and loading out oil from the 10-car loading rack on the Santa Fe, west of White Deer, to its Gainesville refinery.

Gray County will receive a little aid in its problem of lack of storage and pipe line outlets when the Phillips Petroleum Co. completes its 32-mile 6-inch welded line from the county to its refinery near Borger in about another week. Much of its high gravity crude is now being sold or exchanged with major companies buying crude in the Gray County fields, and this line and refinery will eliminate that necessity, giving the Phillips company its own outlet.

Shackelford Sand

The eastern side of Shackelford County had an interesting feature this week when E. J. Stump and others' No. 1 Brewster, in Section 48, Blind Asylum Lands, encountered an oil sand at 2,105-06 feet making the well appear as a possible 100 to 200-bbl. producer, opening up more territory in this part of the county. It is about three-quarters of a mile east of the small Parrish Pool of the Phillips Petroleum Co., and production was found in the sand producing in the Phillips wells.

There are now seven producers in the Clark Pool or Albany Townsite Pool on the eastern outskirts of that village, and four dry holes have been drilled in the pool. Two other producers have been drilled in the NE cor., Section 1, on the Dodson farm on the southern outskirts of the village, making the town appear as if it actually rested upon possible producing acreage, and no doubt later bringing drilling machines to the backyards of the villagers.

Cooke County

The United Producers Oil Co.'s No. 1 Alice Johnson, about 6 miles north of Muenster in Cooke County, has been plugged at 1,708 feet after making about 1,500,000 feet of gas at 1,018-40 feet and encountering an oil sand, shale and lime at 1,045-90 feet, and making about 5 bbls. per day after a 30-quart shot. The test created considerable excitement when it encountered the showings of gas and oil, and it was believed to have opened up another producing area in the county, but offset tests will have to do the producing if a pool is established in the vicinity of this small discovery.

The George Pool, Brown County, produced 765 bbls. of oil from 47 wells, March 5, the pool showing a gradual decline although repressuring has been installed in the field to help maintain production.

The Overall Pool, Coleman County, produced 1,584 bbls. on March 5 from 22 wells and the Eastland Pool produced 1,923 bbls.

TEXAS PANHANDLE COMPLETIONS

Week Ending March 8

Carson County

Denson and others' No. 1 W. E. Cobb was temporarily abandoned at a total depth of 2,200 feet. Reiger and others' No. 1 Hodges made 5,000,000 feet of gas at 2,775-2,885 feet.

Gray County

Smith & McDaniels' No. 1 Noble had an initial production of 50 bbls. oil after having been shot with 130 quarts at 2,750-75 feet and being drilled to a total depth of 2,814 feet. Sines & Reigers' No. 1 J. A. Hopkins, in the NW cor. of west 80 acres SW of Section 84, Block B-2, H.&T.C.R.R. Survey, was temporarily abandoned at 3,206 feet. McMan Oil & Gas Co.'s No. 7 Palmer, 990 feet south and 990 feet west of NE cor. of east 100 acres of west 200 acres of Section 31, Block B-2, H.&G.N.R.R. Survey, was drilled to a total depth of 2,935 feet and made 965 bbls. in 24 hours at the granite wash found at 2,900-35 feet. Operators Oil Co.'s No. 5 Cook-Faulkner, located 990 feet north and 330 feet west of SE cor. of west 90 acres of Section 30, Block B-2, H.&G.N.R.R. Survey, was drilled to a total depth of 2,970 feet, was plugged back to 2,903 feet and swabbed 95 bbls. at 2,900-2,903 feet. Wilcox-Pampa Oil Co.'s No. 10 Combs-Worley, located Section 35, Block 3, I.&G.N.R.R. Survey, was drilled to a total depth of 2,820 feet, found a granite wash at 2,811-20 feet and flowed 1,350 bbls. the first 24 hours, 2,415 bbls. the second 24 hours and 2,888 bbls. the third 24 hours and 10,000,000 feet of gas.

NORTH TEXAS PRODUCTION
Week ending March 8

Panhandle District—	Prod.
Carson County	8,895
Hutchinson County	23,460
Gray County	53,425
Moore County	605
Potter County	....
Wheeler County	610
Total this week	86,995
Total last week	89,050
Decrease	2,055
Wichita District—	
Archer County	17,084
Baylor County	439
Clay County	699
Cooke County	4,767
Foard County	207
Jack County	4,068
Haskell County	60
Montague County	6,263
Throckmorton County	876
Wilbarger County	27,274
Young County	9,172
Wichita County	24,034
Total this week	94,943
Total last week	94,745
Increase	198
Ranger District—	
Brown County	8,130
Callahan County	3,282
Coleman County	4,989
Comanche County	403
Palo Pinto County	641
Eastland County	5,018
Shackelford County	7,611
Stephens County	5,984
Total this week	36,058
Total last week	36,245
Decrease	187
Grand total this week	217,996
Grand total last week	220,040
Decrease	2,044

WICHITA FALLS DISTRICT

Week Ending March 8

Archer County

Barnsdall Oil Co.'s No. 10 Wilson had an initial production of 37½ bbls. of oil at 1,706-10½ feet. Its No. 19 Wilson had an initial production of 37 bbls. of oil and 5 bbls. of salt water at 1,703-05½ feet. Bateman-Dingee's No. 1 Ferguson was dry and abandoned at 1,848 feet. Consolidated Oil Co.'s No. 1 Kemp & Kempner was dry and abandoned at a total depth of 1,852 feet. S. H. Keoughan's No. 1 Turbeville was dry and abandoned at 1,550 feet. J. P. Rayzor and others' No. 2 Turbeville was dry and abandoned at 1,525 feet. Butler & Wise's No. 1 Kunkel was dry and abandoned at 1,204 feet. Roy Carter's No. 1 Young was dry and abandoned at 1,429 feet. F. P. Cullum's No. 5 Falls County had an initial production of 35 bbls. at 1,118-36 feet. T. F. Hunter's No. 2 Kunkel had an initial production of 154 bbls. at 1,157-63½ feet. Lawson & Duke's No. 6 Richardson had an initial production of 58 bbls. at 1,406-10 feet. M. & V. Oil Co.'s No. 3 Kunkel had an initial production of 65 bbls. at 1,143-54 feet. Pandem Oil Co.'s No. 4 Young had an initial production of 8 bbls. of oil and 6 bbls. of salt water at 1,404-15 feet. Pandem Oil Co.'s No. 5 Young had an initial production of 125 bbls. at 1,-409-14 feet. Prairie Oil & as Co.'s No. 8 Clark-Richardson was dry and abandoned at 1,422 feet.

Baylor County

Consolidated Oil Co.'s No. 11 Portwood had an initial production of 75 bbls. at 1,404-25 feet. Its No. 12 Portwood had an initial production of 450 bbls. at 1,385-1,402 feet. Consolidated

(Continued on Page 167)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending March 10

CARSON COUNTY

Company, well, farm, name, section and block—	Remarks—
Champlin Ref. Co.'s No. 5 McConnell, 990 ft. S line, 330 ft. W line, N 120 ac., NW, Sec. 67, Blk. 4, I.&G.N. Sur.	S.D. 500 ft.
Danciger O. & R. Co.'s No. 1 Block, 330 ft. N and E lines, Sec. 112, Blk. 4, I.&G.N. Sur.	S.D. 2,985 ft.
Delmar Oil Co.'s No. 5 Noel, 330 ft. S and W, NE cor. W½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	S.G. 3,000-10 ft.; S. D. 3,131 ft.
Cockrell-McIlroy Oil Co.'s No. 1 Eller, 330 ft. S and W, NE cor. NW, Sec. 200, Blk. 3, I.&G.N. Sur.	Rigging up.
Cockrell-McIlroy Oil Co.'s No. 1 Simms, 330 ft. S and E, E 140 ac., N 160 ac., S 320 ac., Sec. 11, Blk. 7, I.&G.N. Sur.	Rigging up.
Empire G. & F. Co.'s No. 1 Bennett, C SE Sec. 6, Blk. B-5, B.&B.R.R. Sur.	Location.
Empire G. & F. Co.'s No. 1 Thorp, C NW, Sec. 26, Blk. T, A.B.&M. Sur.	U.R. 6-in. csg. 3,446 ft; drlg. 3,-560 ft.
Empire G. & F. Co.'s No. 2 Deahl, C NW, Sec. 25, Blk. Y-2, G.B.&C.N.G.R.R. Sur.	Location.
Gulf Prod. Co.'s No. 1 Burnett-C, C SE SE, Sec. 35, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 1,250 ft.
H.A.M. Oil Co.'s No. 1 Cooper, 330 ft. S and W, E½ NE, Sec. 5, Blk. 9, H.&G.N.R.R. Sur.	T.D. 3,105 ft.; T.D. 3,102 ft.; 2,000 ft. oil in hole.
McClintock et als' No. 2 Garner, 330 ft. W and S of E 55 ac. of N 80 ac., NW, Sec. 105, Blk. 4, I.&G. N.R.R. Sur.	Rigging up.
Osborne et als' No. 3 Percival, 330 ft. N and W, SE cor. E½ NE, Sec. 199, Blk. 3, I.&G.N.R.R. Sur.	Drlg. 868 ft.
Pansota Oil Co.'s No. 1 Block, 330 ft. S and W, NE cor. SW, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	S.D. 3,060 ft.
Phillips Pet. Co.'s No. 1-A Garner, 430 ft. S line, 330 ft. W, Sec. 114, Blk. 4, I.&G.N. Sur.	Drlg. 520 ft.
Prairie O. & G. Co.'s No. 2 Nail, 330 ft. N and W lines, N½ E½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	10,000,000 ft. gas 2,830-2,985 ft.; S.D. 3,123 ft.
Ryan Cons. Oil Co.'s No. 7 Block, 330 ft. N, 990 ft. W, SE cor. NE, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	S.D. 3,062 ft.
Shell Pet. Corp.'s No. 1 Percival, 330 ft. N and E, SE. Sec. 199, Blk. 3, I.&G.N. Sur.	S.D. 600 ft.
Skelly Oil Co.'s No. 19 Schafer, 330 ft. N, 990 ft. E, SW cor. NE, Sec. 198, Blk. 3, I.&G.N. Sur.	6,000,000 ft. gas 2,895-2,970 ft.; S. D. 3,100 ft.
Skelly Oil Co.'s No. 20 Schafer, 330 ft. N, 990 ft. W, SE cor. N½, Sec. 198, Blk. 3, I.&G.N. Sur.	S.D. 3,090 ft.

(Continued on Page 172)

Decomposed Chert Forms Mud Material

Deposit Near Rogers, Ark., Mined and Milled Into "Opalite," a Substance for Increasing Weight of Circulating Fluid

By L. G. E. Bignell
Petroleum Engineering Editor

ROGERS, Ark., Mar. 10.—This section of the Ozarks, about 150 miles east of Tulsa, has long been known as a delightful country in which to spend a summer vacation and also as a farming community where grapes and other fruits are raised in abundance The country abounds with springs of crystal clear water and it is said that the Indians knew of the curative properties of these waters and made their camps in these hills.

Evidence has been discovered that the flint that is so plentiful in the Ozarks furnished the material from which the Indians made tips for their arrows and spears, as well as the rock out of which they fashioned their tomahawks and axes. This flint or chert has been identified by the geologists as of Mississippian age and is known as the Boone formation.

This formation consists of a series of alternating limestones and cherts having an average thickness of 350 feet. The Boone represents the Kinderhookian, Burlington, Keokuk and basal Warsaw stages of other regions.

Flint is a very compact, dark gray, silicious rock. Chert is an impure flint, usually of light color. These rocks do not in most cases form extended independent beds, but occur chiefly in limestones in the form of irregular masses and thin layers. Both contain fossils of the silicious parts of various sea animals, particularly sponges and protozoans. The silica was taken from the sea water by such animals, and at their death formed deposits, often scattered through other sediments.

Chert Subsequently Decomposed

Subsequently the chert has been decomposed by ground waters and near Rogers a deposit of reworked silica formed by this method is being mined and milled and the product is being used as an admixture for rotary mud as well as for the manufacture of hard rubber, enamels, paints, electrical insulators and even cosmetics.

The deposit is owned by Corona Silica, Inc., and the mine is about 4 miles south of Rogers, where the company has a mill for grinding and preparing this material for marketing under the trade name of "Opalite."

This silica has a chalk-like consistency and is easily broken or cut, but upon examination under the microscope it is found to be made up of minute particles of amorphous silica.

"Amorphous" is defined as "having no determinate form" and when it is remembered that silica as quartz (in which form it is most familiar as sand) is generally light colored and glassy in appearance and a crystal that is very hard, so hard in fact that it will scratch glass, it is rather surprising to learn that this material as mined near Rogers is in the silica group.

The origin of this material seems best explained by the theory that it has resulted from the decomposition of chert. Chert has been found grading into this amorphous type of silica and the gradation has geen so gradual that no line can be drawn between the two rocks.

The deposit near Rogers is found on the top of a hill of some 157 acres and outcrops in the ravines on the slopes of the hill. It is covered with a few feet of overburden made up of weathered material. At this time it is being mined through a shaft sunk into the deposit about 25 feet, with two drifts leading from this shaft at a point about 18 feet below the surface.

About 2,500,000 Tons Blocked Out

The drifts are about 8 feet high and are entirely in this amorphous silica and it is estimated that there is approximately 2,500,000 tons of this material blocked out by drill holes. The Southwestern Engineering Corp. of Los Angeles, Calif., which surveyed and checked the deposit, estimated that 10,000,000 tons is available but not entirely blocked out. The test holes show that the deposit is 10 to 85 feet thick.

The material as found in the mine contains about 20 per cent water and owing to its peculiar characteristics it has been found necessary to keep additional water at the point of the drill to prevent the silica from forming a jelly-like mass.

Light charges of dynamite are used to break down the earth and if it is desired to break it into large lumps a 20 per cent dynamite is used and if the material is required in a finer size 50 per cent dynamite is used. When the higher per cent dynamite is used it has been noted that a great deal of this jelly-like material has been formed, presumably due to the vibration set up in the formation from the heavier charge.

This theory is confirmed to some extent by the fact that in transporting the material over the mountains it has been noted that if the truck is driven rapidly and the road is particularly rough part of the material will be jelled in the sacks. The moisture content of 20 per cent as found in the mine will account for the water needed for this jellification as the silica is very porous and it seems probable that part of the water will shake out of the upper part of the truckload and concentrate in the bottom layers.

What Analysis Shows

The R. W. Hunt Co. of Chicago has analyzed this material and finds the following component parts:

	%
Silica (SiO_2)	99.50
Iron oxide (Fe_2O_3)	0.045
Aluminum oxide (Al_2O_3)	0.10
Calcium oxide (CaO)	0.005
Magnesium oxide (MgO)	0.10
Loss by ignition	0.25
Total	100.00
Specific gravity	2.655
	Volume (%)
Absorption test water	32.0
Absorption test mineral oil	41.0
Absorption test vegetable oil	34.0

The material is hauled from the mine to the mill by truck in loads of about 11,000 pounds each and one truck will transport about 50 tons of the material in a 10-hour shift. A road has been constructed by the Corona Silica Co. from the mine to the county road leading into the town.

The material is first crushed at the plant in a hammer mill and then elevated to a storage bin and conveyed from there to an Allis-Chalmers tube or pebble mill where it is wet-crushed to a fine mesh.

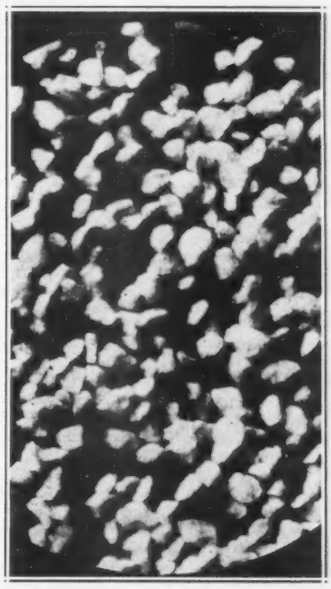
This crushing is done by filling the mill, which is lined with silica bricks, with silica pebbles and adding water and rotating the mill which is mounted upon steel tires that rest on steel wheels or rollers. The power is furnished by an individual electric motor and the speed reduction between motor and tube mill drive is effected by the Texrope drive.

Velocity of Flow Determines Grade

The ground product is next elevated to another set of storage tanks by a Wilfley sand pump and from the storage tank is sent to either a Dorr thickener where a finished product is made by water classification, or to a set of settling tanks or vats where several grades of material are made depending upon the velocity of flow of the water across these vats.

The product from either the Dorr thickener or from the vats contains about 20 per cent moisture and is conveyed to a Louisville steam dryer where the moisture content is reduced to 5 or 6 per cent.

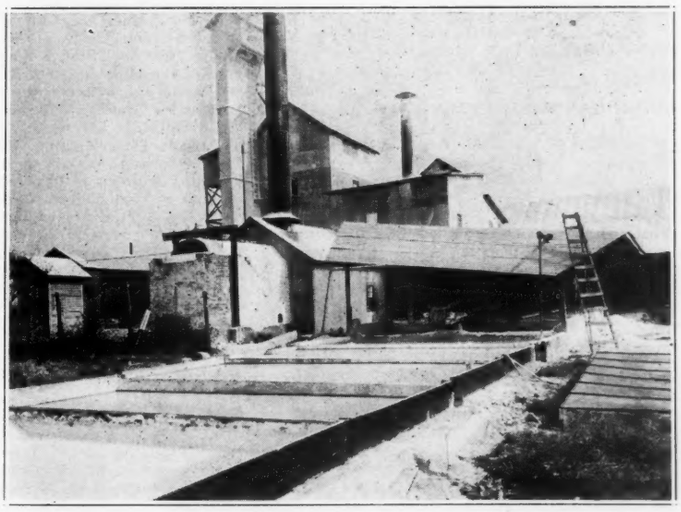
From the dryer the product is elevated again to bins and from the bins it can be sent to either a Gayco air separator, where the air-blown finished product is made, or to a set of Hummer screens, where several different size products are made.



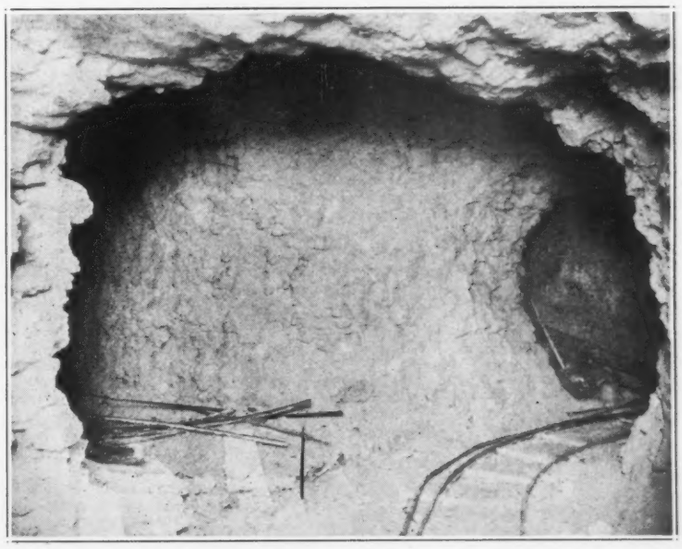
300-mesh Opalite as it appears when magnified 200 times.

The air-blown material is as fine as 325 mesh, while the screened materials will vary in size from 20 mesh down to minus 200 mesh. All material sold for

(Continued on Page 90)



Settling vats at Rogers, Ark., mill of Corona Silica, Inc.



Drift in deposit of amorphous silica near Rogers, Ark.

Pipe Line Construction News

WYOMING-MONTANA LINE IS BEING NEGOTIATED

DENVER, Colo., Mar. 8.—Negotiations are pending which are likely to result in construction this year of another major natural gas project in the Rocky Mountain area comparable in size and cost with the Amarillo-Denver line completed in 1928 by the Colorado Interstate Gas Co. and affiliated interests and the Colorado-Wyoming-Utah project built in 1929 by the Western Public Service Co. The proposed system will transport natural gas from the Big Horn Basin in Wyoming and southern Montana to Butte, Anaconda, Helena and other Montana cities.

The Hope Engineering Co. of Mount Vernon, Ohio, and the Moody-Seagraves interests of Houston, Tex., are active in the negotiations, but no statement has been made whether it will be a joint undertaking, or whether one will build the line. One incentive to the construction of the line is to give Anaconda Copper Mining Co. a supply of natural gas for its smelters in the Butte-Anaconda district. Anaconda has had favorable results in the use of natural gas in its Great Falls plant which is piped from the Kevin-Sunburst Field in northern Montana. Negotiations under way some time ago for the piping of gas from southern Alberta proved unsuccessful because the Canadian government was unwilling to have gas exported out of the Dominion.

Natural gas is becoming an important factor in copper smelting operations, the plants at Garfield, Utah, and in the vicinity of El Paso, Tex., having been provided supplies of that fuel.

The projected line will be approximately 300 miles long and cost around $20,000,000. Some difficulties in the negotiations, due to other interests owning gas properties in Wyoming giving careful consider to a similar undertaking, are being ironed out and an agreement probably will be reached to harmonize these interests into the one prospect. The Ohio Oil Co., the Midwest Refining Co., the Producers & Refiners Corp., the Kinney-Coastal Oil Co., and several other producers have gas properties which would fit in with the line-up.

CITIES SERVICE TO BUILD LINE TO OKLAHOMA CITY

Cities Service Co. announces that it will construct a 20-inch natural gas pipe line from a point 15 miles south of Perry, Okla., into the Oklahoma City Field. This line, which will be 50 miles long, will be an extension of the 20-inch line from Dilworth, Okla., to Perry, which was completed last fall.

In addition to providing an outlet for the natural gas reserves of Indian Territory Illuminating Oil Co., the new line will connect this field with the company's natural gas pipe line system and make an additional supply of natural gas available to domestic and industrial markets.

This is the first major pipe line to tap what is said by the company to be the largest natural gas reserve in the Mid-Continent Field. The line, which will have potential capacity of approximately 100,000,000 feet daily, will be completed early in the summer.

INDIANA GAS LINE

EVANSVILLE, Ind., Mar. 10.—Gas Transport, Inc., will use 100 men in laying about 20 miles of gas line between here and Oakland City, according to R. D. Gwynne, manager of the company. The work will last from 60 to 80 days, it was said.

TEXAS-CHICAGO NATURAL GAS LINE IS TO HAVE TWO DISTINCT LOOPS

By B. E. V. Luty

PITTSBURGH, Pa., Mar. 10.—The long-mentioned natural gas pipe line from Texas to Chicago is now taking definite form and will be bigger than was first talked of, in fact approximately double the size, as what is now planned is a sort of duplex line, two distinct lines over the same right of way but far enough apart to prevent an accident to one of them interfering with the other. A large quantity of gas is to be transported and it is well to have two lines to make certain that at no time will there be any interruption. All parties in interest are to join, there being first a group of gas producers, including Standard of New Jersey, Phillips Petroleum, Skelly Oil, The Texas Company and Columbian Carbon, next the Cities Service Co. to build and operate the line and finally Insull in Chicago and other interests who are distributors. It is understood that the line will be partly welded and partly coupled. Headquarters of the Henry L. Doherty interests, which will have charge of the construction of the line, will, it is reported, be in Chicago.

The first line is to be laid this year, 800 to 900 miles of 24 or 26-inch pipe, the second line probably next year. Contracts for the pipe are predicted to be let in not less than 30 nor more than 60 days.

National Tube Co. has been somewhat uncommunicative as to when it will be able to supply large diameter pipe other than fire welded, that is, seamless or electrically welded, but it is understood that it will be ready to figure on this line with seamless, also that an order has just been taken from Empire for 5 miles to be laid as a test line near Oklahoma City, some electrically welded from Milwaukee being laid in the same line, the pipe mentioned in this report a fortnight ago as having been bought. It is possible that another pipe interest will be able to offer a new product when the Texas-to-Chicago line comes up for bidding.

Tubular goods business generally has continued very dull, there having been no improvement in the past two or three weeks, but if anything a decrease from the volume of business in January. Pipe and tube mills have been averaging an operation under 40 per cent in the last fortnight, against fully 40 per cent in January. Demand for standard or merchant pipe has had no increase, when a seasonal increase by this time might possibly be expected, while January business had been swelled by a little replenishment of jobbers' stocks after an unusually drastic curtailment for January 1 inventory. Oil country goods demand continues light and what little there is runs largely to seamless. Boiler tubes and mechanical tubing are only moderately active.

Prices of tubular goods are reported strictly maintained all along the line, as formerly. Costs are high with so light an operation and besides there is no incentive to cut when no large or even moderate sized orders are going.

It is now clear that the steel business as a whole has been losing somewhat in activity since just about the middle of February. There is no great decrease, but any decrease at all is impressive because usually trade increases at this time of year. In the retrospect it appears that the large improvement in general steel demand from December to January was registered partly by December being particularly light through stocks being cut all down the line, and by there being some replenishment in January.

With the recent downturn in the volume of steel buying, the rate of steel production has dropped a trifle, say 2 to 4 per cent, since the middle of February. The rate is still moderately high relative to the low stage of building activity.

Finished steel prices are quotable as formerly, there having been no material change for say six weeks, but prices are by no means particularly strong. Black and galvanized sheets have firmed up and producers are now disposed to ask $2 a ton advance for second quarter.

PURE OIL BEGINS WORK ON 195-MILE VAN LINE

FORT WORTH, Tex., Mar. 10.—The Pure Oil Co. has started moving material into East Central Texas for construction of its 10-inch line from the Van Pool in Van Zandt County to its 20,000-bbl. refinery at Smiths Bluff on the Gulf Coast, a distance of approximately 195 miles, but as 19½ miles of 10-inch has already been laid to Chandler from the pool, construction will have to commence only at that place. Crews are to work from both terminals, and about 45 to 60 days will be consumed in laying the line, which will have a drop of a little over 500 feet, and will be enforced by five main line stations equipped with motor-driven centrifugal pumps.

This line has been talked of since the discovery of the Jarman well in the Van Pool in October, 1929, but as the field was being drilled under the unit plan of development activities were held down to a small degree, consequently the few wells which have been on production have been pinched and the present 10-inch line to the 70-car loading rack at Chandler has been sufficient to handle the desired daily average. As several wells are now due for completion, and several others are drilling, and still others building rigs or rigging up, another outlet was deemed necessary as soon as it could be constructed. After W. M. Averill, who is in charge of Pure Oil pipe line and crude purchasing operations, returned from Chicago about a week ago announcement was made that the line would start immediately. The line will be a Smith welded line having a capacity of around 40,000 bbls. daily, and although this would not accommodate the present daily potential, all wells will no doubt be pinched in as they are completed, with but little oil run to storage.

MICHIGAN LINE INDEFINITE

MUSKEGON, Mich., Mar. 10.—Operators in the Mount Pleasant Field are wondering when the Pure Oil Co. plans to go ahead with its plans for a pipe line from the field to Bay City. Surveying for the pipe line was completed last fall and it was expected the line would be laid in time to start boat shipments of crude from Bay City to the Imperial Refineries at Sarnia, Ontario, Canada, this spring. No steps have been taken yet to build the line and no announcement has been made as to when or if it will be built.

SUN OIL PIPE INQUIRY

The Sun Oil Co. pipe line from Marcus Hook to Pittsburgh and western state points will require 20,000 tons of 6-inch pipe, now before the mills at Pittsburgh, Pa., for estimates.

HUMBLE WILL BUILD OUTLET FOR REFUGIO

HOUSTON, Tex., Mar. 10.—A second pipe line outlet for the Refugio Field of South Texas was assured late Monday when Humble Oil & Refining Co. made known plans for an 8-inch line from the field to the Humble Oil & Refining Co.'s refinery at Ingleside, and a possible extension of this line from Refugio north to the new Pettus Field in Bee County.

The Refugio-Ingleside line will require 28 miles of pipe. The extension to Pettus will be approximately 35 miles. Work on the Refugio project is expected to be completed and the line handling oil before April 2. The Pettus extension probably will wait further developments there and while there are only two producing wells, one owned by the Humble Oil & Refining Co. and the other by the Union Producing Co., Refugio, which has had a rapid development and has risen to a place of first importance among Texas fields, having a production of approximately 38,000 bbls. daily with an undetermined potential area for development, until now has had only one pipe line outlet, that of the Gulf Coast Pipe Line Co. This line, which consists of a 6 and 4-inch line and an 8 and 10-inch loop recently completed, early this month was purchased by the United Gas Co. of Houston through its producing subsidiaries from the Morgan interests of San Antonio. That line has a capacity of approximately 50,000 bbls. daily and extends from the field to the company's ship terminal tank farm at Port Aransas, a distance of 38 miles. Until this year the bulk of Refugio production has been moved out by tank car which has resulted in considerable congestion due to the rapidly increasing production. The posted price of Refugio crude is 55 cents.

BUTTE-ANACONDA PROJECT

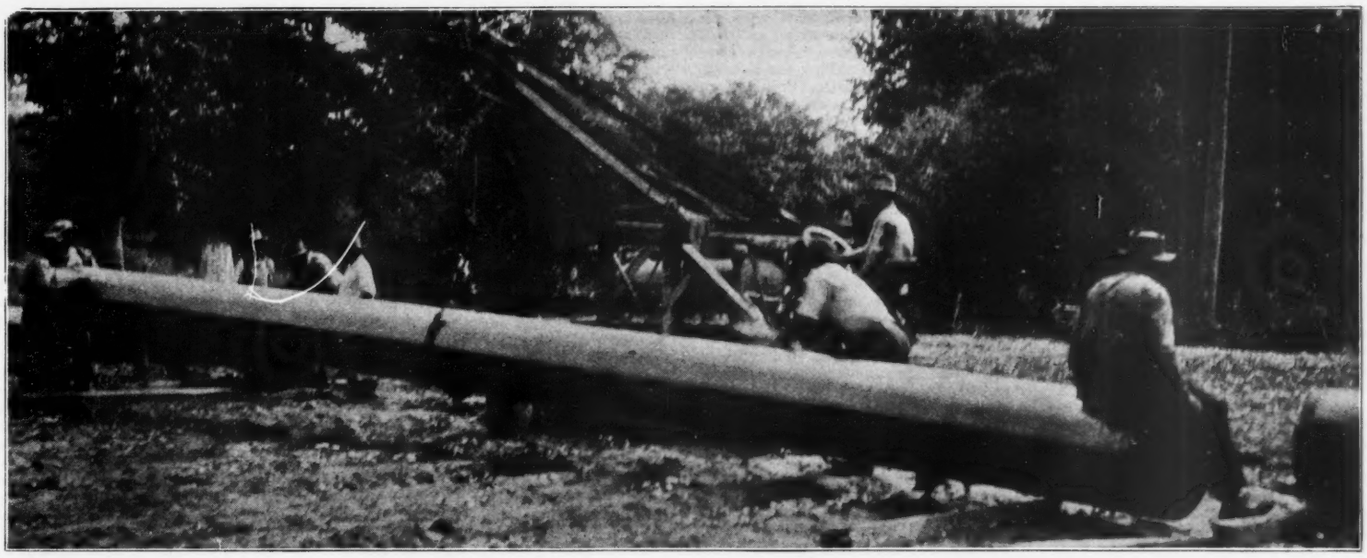
CASPER, Wyo., Mar. 8.—There have been no new developments in connection with the proposed gas line of the Hope Engineering Co. from northern Wyoming gas field to Butte and Anaconda. A group of Anaconda citizens have applied for a gas franchise in that city but no action has been taken by the council. It is understood the Hope company is negotiating with owners of gas reserves in the Wyoming fields, but no announcement as to the progress of these negotiations has been made.

HUMBLE LINE TO BAYTOWN

HOUSTON, Tex., Mar. 10.—Humble Pipe Line Co. has started work on laying a 4-inch line from the Humble Field to the refinery of the Humble Oil & Refining Co. at Baytown, a distance of approximately 20 miles. The line will have a capacity of 5,000 bbls. daily and will enable the Humble Oil & Refining Co. to run its deep horizon production at Humble direct to Baytown through its own line, instead of through the Texas Pipe Line Co.'s line to Liberty and then through the Humble's line from there to Baytown. Until now the Texas Pipe Line Co. has had the only pipe line outlet for the deep production on the south side of the Humble Dome.

PLAN OMAHA GAS BID

CHICAGO, Mar. 8.—The Missouri-Kansas Pipe Line Co. is reported planning a bid to serve the Omaha territory. Directors of the company said that in the event their bid is accepted they are prepared to start immediately the erection of a pipe line drawing supplies from the Texas Panhandle, Oklahoma and Kansas fields.



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URGE CO-OPERATION IN ANNUAL ADDRESS

(Continued from Page 50)

ably discuss today—so many problems that require solution—that I will not detain you long from the purposes of our meeting. I do desire, however, to extend my comments regarding the association a little further, to briefly mention some trends in our affairs, to enumerate a few of the many problems, and make some suggestions with respect to methods we might consider in attempting to improve conditions.

Value of Co-operation

Probably no single factor has contributed more to the industrial growth of our country than the development of various means of communication. Outstanding examples such as the railroad, the telegraph, the telephone, mail and express, aviation, and the motor-vehicle are of everyday contact and recognized importance. Entirely aside, however, from forms of communication that are associated with the transportation of goods, messages, or passengers there exists a less tangible but equally important character of communication that deals with the transmission of ideas and business judgment. This latter fact, in my opinion, offers trade associations their greatest opportunity to be of service and explains the importance they have assumed in the affairs of industry.

Good judgment, however, depends on knowledge and in the early days refiners had little knowledge of what was taking place outside the province of their individual plants. They were, in a measure, like the blind men that met the elephant. One touched the trunk, another felt an ear, while the third placed his hand on the body. Engrossed in his own experience, each failed to acquire the general knowledge necessary to good judgment. So they went their way, quarreling over what the elephant really was. Correct opinions are of great importance and modern business has long since discovered that two very important things are the possession of sufficient facts to indicate the state and trends of the industry of which that business may be a part, and the elimination of hasty conclusions that often court disaster.

Accurate Statistics

Our association was four years old when the Federal Trade Commission, in one of its several reports on the refining industry, made the following statement:

"The absence of accurate statistics of production, stocks, and sales of crude oil and the chief refined products make the working of competition imperfect. The only statistics of crude oil currently available are the uncertain and sometimes conflicting figures printed in trade journals; while statistics of the production of gasoline and other refined products are practically nonexistent for current purposes. Even the export statistics are unsatisfactory. The crude oil industry is a peculiarly speculative one at best, and its vicissitudes affect the refining business. With such imperfect knowledge of conditions the refiners with small resources are especially handicapped. If there is to be a reasonable adjustment between demand and supply, there must be knowledge of demand and supply conditions."

The quotation I have read is significant of the limited opportunity for general observation of conditions then existing. Eventually, this report led to the establishment of the monthly statistical service of the Bureau of Mines. The growing appreciation of the need for facts paved the way for the many other sources of information now available. Refiners now have a much more comprehensive knowledge of conditions than was possible in the past, and information showing the important play between supply, demand, and stocks is available for constant observation, study, and correction. Not only are our facts now much more plentiful than in the past, but, more important, economic laws are better understood and co-operation has become more necessary and more attainable.

It is surprising that with the informatory resources now at our command we have such scarcity of ideas to impart, such divergences in judgment with respect to what to do, appear so satisfied to accept adverse conditions with complacence, and fail to utilize our association more advantageously. Probably an error in our point of view is partially responsible for this latter fact. We speak, and think, so often of belonging to the association that we lose sight of the pertinent fact that in reality the association belongs to us. We thus fail to properly appreciate that we have in our own employ an efficient and willing medium to assist in carrying our whatever plans we deem advisable for the welfare of our industry and ourselves.

No matter what our plans may be, however, decisions with respect to mutual problems and co-operative tasks should make full allowance for the constant changes that affect our industry. It is imperative that we keep pace with events as they occur. It is important that we anticipate what the immediate future has in store. One has but to review the occurrences of 1929 to realize that refining history is always in the making, that important changes are taking place, and that influences of the past, the present, and the probable future are all important.

Outstanding Developments

Among the most outstanding of recent occurrences might be mentioned the efforts of producers to limit crude oil output; the adoption of a national code of marketing practices; the construction and assimilation of retail outlets by refiners; a decrease in the volume of gasoline sales in the open market; the merging of refining properties; the volume and value of our imports; the greater demand for high-compression fuels; the increased volume of California products moving east; intensified group competition in refiners sales; proposals to transport gasoline by pipe line; the overproduction of gasoline; and last, but by no means least, depression in the value of the most important of our products. Of significance among recent occurrences might also be mentioned the increasing yield of gasoline from an equal quantity of crude. In 1928 for each barrel of crude refined within the country the gasoline output was 41.3 per cent. In 1929 the gasoline yield had increased to 44 per cent, and was as high as 46.1 per cent during one of the late months of the year. Should the gasoline yield during the current year show an increase comparable to that recorded in 1929, refineries in 1930 will produce approximately 6.2 per cent more gasoline with no increase in the volume of crude refined from that of 1929.

The developments of the past are still in progress, some gaining and some losing in importance. In addition, entirely new factors intrude themselves and demand attention from time to time. The things serve to show the great diversity in prob- I mentioned with respect to 1929 will lems we encounter, also to point out that there should be something tentative in all our plans.

In my opinion an important purpose of our association is the collection and collation of individual ideas and problems, and the interpretation and transmission of these in terms of general interest and common welfare. The individual is the important element in the association and whatever measure of success it may achieve by organized ideas and efforts depends most largely on the extent to which the individual members participate in the things it seeks to do. Undoubtedly some such line of thought was responsible for the nature of our annual meetings during recent years. We are therefore, here today to discuss affairs, transmit ideas, harmonize opinions, and adopt whatever procedure we believe best suited to our welfare.

Several Problems

While fundamentally the only problem of our industry, or of our individual plants, is the attainment and maintenance of a reasonable profit, to attempt to chart correct procedure, in either case, by simply deciding to make our business profitable would be impossible. The problem is too complex for generality. Experience has taught the advisability of dividing the conduct of our business into convenient parts such as manufacture, sale, transportation, accounting, etc., and it is equally advisable to segregate our one great problem into parts, or lesser problems, more easily examined and dealt with.

If we were to attempt a segregation of this character, it appears to me the outstanding portion of the basic problem might be termed the failure of gasoline to adequately contribute to the reasonable profit. Gasoline, considered as a division of the problem, might be examined with respect to the three subdivisions of quantity, quality, and price. These, in turn, might be simplified by reducing our examination to smaller fields by considering such factors as requirements of the market, intrusion of the product of other plants, changes in consumers preferences, cost, price, and competition. By considering one portion of the problem at a time there is better opportunity for practical application of our efforts. It would be ill-advised, however, to fail to recognize the interlocking nature of these smaller problems and each should be examined with respect to its place in the larger problem of reasonable profit.

It would certainly be a fallacy to think of crude as the only thing of importance in our affairs just because without crude our plants would cease to function; it would be wrong to consider our refineries as all-important just because without them crude would be worthless and our salesmen idle; and it would also be an error to look at selling as the one important task just because without sales the operation of our plants would produce no revenue. We recognize both the differences and close association of such matters. In a like manner the various economic factors with which we are concerned should be accorded a similar recognition. For example, quantity should be considered in connection with quality and price, while price would be unimportant but for quantity. There is, or should be, close co-operation between the working departments of our companies, just as there is a close association between the problems which affect the degree of welfare we collectively attain.

One great problem largely responsible for the failure of gasoline to properly contribute to our welfare is, of course, overproduction of the product. There is probably little I can say in this regard that would not be simply a repetition of things we have all often thought, often hear, and often read. The penalty for overproduction is a matter of common knowledge based on sad experience; the intrusion of overproduction can be easily observed from information we have at hand; the effect of overproduction is quickly and keenly felt; and the only relief from its influence lies in increased demand or reduction in the rate of manufacture.

There is but one proper measure for gasoline production. Demand within the profitable market. In 1929 the measure was exceeded, the industry paid the penalty, and the error was one for which we are still paying at the present time.

Gasoline Overproduction

Last year the disparity between gasoline production and demand was by far the greatest in the entire history of refining. With an adequate working supply on hand the combined refineries of the country added 10,000,000 bbls. to their stored supply to intensify sales desires and add to future costs. While, with increased volume of business, an increased inventory is to be expected, the stock addition of 1929 exceeded the bounds of reason. The magnitude of this increase can be appreciated if we consider that during the preceding 11 years —all of the years for which we have the government statistics—the average annual increase in gasoline stocks was but slightly in excess of 2,000,000 bbls. A discouraging feature of this excess of production of 10,000,000 bbls. was that it occurred during a year when demand was good and even greater than the majority of the early estimates.

Briefly stated, the experience of 1929 consisted of a 15 per cent increase over the preceding year in gasoline production in conjunction with a 12½ per cent increase in refinery shipments and a resultant increase of 30 per cent in stocks. While the increase of the heretofore unapproached quantity of 10,000,000 bbls. represented less than 2½ per cent of the years gasoline production, it was sufficient to destroy all opportunity for reasonable profit from refinery operations. That 2½ per cent, small as it may appear when thus expressed, represents a narrow margin that largely decided the issue between success and failure. It would have appeared no greater if de-

DECLINE IN COMPLETED WORK AND INITIAL PRODUCTION IN FEBRUARY

February was one of the quietest months in the field the oil industry has experienced in a long time. A decline of 219 in completed wells as compared with January and a decline of 322,927 bbls. in total initial production tells the story of the slump in operations brought about by the generally unsettled conditions in the industry created by the immense potential production of the country, and the appeals on the part of governmental agencies for less drilling. Only 163 wells were completed in Oklahoma and 59 in Kansas in the course of the month, while the big West Texas territory reported only 72 completed wells. The busiest field in the country was the Pennsylvania grade fields of New York, Pennsylvania, Southeastern Ohio and West Virginia, which, under the name of the Eastern Field, is credited in the report with 507 completed wells in February.

In the matter of drilling operations the report shows that at the close of February there were 919 rigs up and 3,693 wells classified as drilling, a total of 4,612 field operations, or a decline of 50 in rigs and an increase of 49 in drilling wells, a net decline of 1:

SUMMARY OF WELLS COMPLETED

Field—	Comp.	Prod.	Dry	Gas
Eastern	507	2,999	32	55
Central Ohio	82	1,488	26	32
Lima	13	196	3	3
Indiana	11	257	7	2
Michigan	28	2,543	10	3
Illinois	9	220	4	0
Kentucky-Tennessee	66	784	30	9
Oklahoma	163	242,983	39	20
Kansas	59	8,774	27	8
Texas Panhandle	35	13,110	7	8
N. Central Texas	200	6,742	106	6
E. Central Texas	4	5,230	0	0
West Texas	72	37,119	20	2
Southwest Texas	76	56,325	27	2
East Texas	3	....	1	2
Gulf Coast	82	32,385	27	3
North Louisiana	40	8,994	14	11
Arkansas	5	181	4	0
Wyoming	7	2,795	2	2
Montana	4	126	2	0
Colorado	2	....	2	0
New Mexico	11	13,980	3	2
Total February	1,479	437,231	393	170
Total January	1,698	760,158	492	223
Difference	219	322,927	99	53

RIGS AND WELLS DRILLING

Field—	Rigs	Dlg.	Ttl.
Eastern	105	353	458
Central Ohio	74	177	251
Lima	4	29	33
Indiana	6	41	47
Michigan	56	117	173
Illinois	2	42	44
Kentucky	13	98	111
Alabama	2	3	5
Mississippi	2	16	18
Oklahoma	146	876	1,022
Kansas	63	259	322
Texas Panhandle	31	118	149
North Central Texas	70	420	490
East Central Texas	8	29	37
West Texas	68	225	293
Southwest Texas	39	119	158
East Texas	2	12	14
Gulf Coast	41	204	245
North Louisiana	88	125	213
Arkansas	11	48	59
Wyoming	21	123	144
Montana	18	80	98
Colorado	18	78	96
New Mexico	28	69	97
Utah	3	32	35
Total February	919	3,693	4,612
Total January	969	3,644	4,613
Difference	50	49	1

ducted from the production program of refiners.

Few manufactured commodities are as necessary as gasoline. Despite this fact, gasoline production carried to excess, from being a virtue becomes a vice. Our cars of gasoline are like the aces in a game of cards. Where four may be admired and quite correct, the intrusion of a fifth leads only to trouble, suspicion, hatred and immediate turmoil. With the effect of excessive gasoline, regardless of in whose hand, so widely known it is difficult to realize just why individual plants, and groups of plants, should carry zeal for manufacture to a state that infringes the rules of the game of business. Possibly such actions are not the result of refiners judgment but simply a response to the dictates of some hidden power over which refiners have no control. If this is true a better relationtionship and understanding between crude producers and refiners is a vital problem in our affairs. All branches of the industry should appreciate that there is a definite limit to the consumping ability of every market.

While California has been rightly blamed for much of the disaster experienced in 1929, overproduction of gasoline was the rule at practically all refining groups. California made 6,000,000 bbls., the Mid-Continent 1,100,000 bbls. and all other groups of plants 2,900,000 bbls. in excess of sales. Stock increases alone, however, are an insufficient index to the situation. Any plant or group of plants can manufacture far beyond advisable limits and by virtue of relative price reduce its stocks to the detriment of its competition. A comparison of increases in volumes of shipments for the different groups is most illuminating with respect to competition between refining groups.

Production Increase

If we compare the gasoline shipments for the country as a whole in 1929 with those of 1928 it will be found there was a substantial increase of 12½ per cent as previously mentioned. For the individual groups the Bureau of Mines reports approximately the following changes in refinery shipments:

East Coast	8%	increase
Appalachian	1%	increase
Indiana-Illinois-Kentucky	19%	increase
Oklahoma-Kansas	3%	increase
Inland Texas	21%	increase
Arkansas-Inland Louisiana	28%	increase
Texas Gulf	11%	increase
Louisiana Gulf	17%	increase
Rocky Mountain	5%	decrease
California	22%	increase

As constant changes affect the markets of various groups, it would be most illogical to expect uniformity of increase. The divergence in these percentages is so pronounced, however, that it requires but little imagination to conclude differences in quality of product, sales ability, and advantage of plant location or raw material were overshadowed by some more powerful factor, such as relative price, in 1929.

Competition between the groups in search for gallonage has reached a point where increased business is no longer an indication of added welfare. In my opinion, neither sound law nor good business judgment requires or suggests that competition should be carried to a point where goods are sold without adequate profit or at an actual loss, not merely to the least efficient, but to everyone concerned. It impeaches both the character of the law and the capacity of business for sane management of its affairs. Unquestionably competition should be maintained between individual plants and groups of plants. Nothing I have said is intended to oppose wholesome and legitimate competition within the limits of a living profit to competent plants. Nor do I infer that any group is intentionally taking losses to injure others. I do wish to impress the thought, however, that group competition is extended beyond the pale of reason. Possibly the logical solution to such a problem is a more universal economic education within our industry.

No Excuse for Error

Some very close estimates were made with respect to 1929 demand. However, regardless of whatever degree of error existed in any early calculations, all refiners and all refining groups had sufficient data to revise and improve their estimates as the year progressed. Back in the old days when refiners had restricted sources of information at their command there was a real excuse for error. At the present time, however, with weekly and monthly reports at hand, there is but slight reason for conditions such as those of the year just ended.

Price depressions increase both the variety and number of our problems. There is a much greater stability between the price of crude and gasoline at retail than between crude and the price of gasoline in the open tank car market. In consequence, the wide margins beyond the refinery that invariably exist when refiners' profits are reduced by price lead to many ills. Not theory but practical experience has often shown that when the open tank car market price at refineries affords too great a spread in comparison with the price to consumers, this wide margin provides a field for secret rebates, encourages an enlargement of an already overbuilt system of distribution, leads to discounts, and unethical practices of distribution.

While the code of ethics so widely endorsed throughout the industry in 1929 may be expected to gradually mitigate the evils of unreasonable margins a much more effective remedy would be the elimination of the excessive margin by the maintenance of a profitable refinery price.

Market Report

The open market for our product is one of our greatest problems. In this connection I would like to quote the following from one of the reports of our marketing committee:

"It seems probable that many refiners must have a distorted conception of the ultimate effect of their transactions or an inadequate idea of the importance of the open market. In reality the open market has an importance in no way comparable to its actual size.

"Those who sell on such a market are naturally directly affected by its prices; those who sell on contract are, indirectly, but little less immune from its influence on their profits; while even those who sell through stations might well bear in mind the price wars and increased competition made possible by its all too frequent periods of depression and again recall the drastic reductions in service station prices that occurred when integrated price posters lost faith in the ability of refiners to maintain the tank car price at a profitable level.

"It has often been said that a very few cars will break the market. The open market, and particularly that for the basic grade of product, is really much smaller than is usually appreciated, and hence more susceptible to the influence of adverse sales. In such a situation the dumping of even a few cars is multiplied in importance by the fact that they are often offered to a number of prospective buyers and the subsequent use of these offers acts as a leverage to reduce the general market to a corresponding level."

The remarks of the committee are as relevant today as they were when uttered. Since then, however, one important problem of the open market has been intensified. In my opinion the decreased number of cars that constitute the open market detracts from the profitableness of sales.

Weighted Average Price

In view of the tremendous influence of the open market on the value of all sales, whether made in that market, by contract, or through controlled domestic outlets, the size of this market at once becomes significant and the character of those who trade therein becomes important. Transaction on the open market present, when recorded, an open index to the price at which gasoline may be acquired. These recorded transactions are not restricted to the sales of companies whose policies of price are based on the logic of existing conditions but also include the sales of refiners that may by force of crcumstances abandon all thought of manufacturing costs and sell regardless of all considerations beyond their need for immediate cash. It is protection from such sales that make volume on the open market important and a weighted average price desirable.

A small amount of material sold at a loss should have no great effect on a large volume sold at a fairer price. However, when a range of prices only is considered, the sales of the bankrupt are equally as important as the sales of the finest marketer if the mean between the high and low is accepted as an index of the market price. Five cars at a certain price are a powerful influence in a market restricted to but a total of 10 cars; however, these five cars would have but slight effect on a weighted average based on a market of 100 cars. In this latter case, however, were only the range of prices considered the five cars, if sold at the low of the market, would have equal influence with the 95 if the latter cars were all sold at a higher price. The better class of sellers for their own protection should participate in a market that so vitally affects their profits, and in sufficient volume to make their influence felt.

Sales to Brokers

Another factor that frequently reduces prices to an unprofitable level is our sales to brokers. In my opinion it would be far from correct to condemn all sales of this description. Frequently the broker, operating on a reasonable margin and supplying an established market, is an entirely proper, dependable and useful medium of real assistance to refiners. Just as frequently, however, the broker is but a market speculator, thriving best on wide fluctuations in our prosperity, and dependent on ability to underprice the going market for his sales.

Entirely aside from price that may prevail by reason of the volume of production, brokers sales, interplant and intergroup competition, or the restricted volume of spot sales, it seems to me there are many other things we might consider with respect to price and policies of price.

We all know that personal judgment or personal necessity often determines the price at which material sells. There is no downward limit to a market subject to such influence. While competition is a vital factor, as it should be, in our prices, should there not be some discrimination in our interpretation of such a term? To me it seems entirely wrong that we should be required, or that our policies should allow us to accept the scattered offerings of refiners with the lowest judgment as to value, or the greatest need for sales, as the real competition that limits the value of our product and thus influences, possibly prohibits, the reasonable profit we should enjoy.

Possibly the problem of price lies in the fact that we have no policy. Certainly this is so if closed transactions are the basic things that make our market. At our mid-year technical and accounting meeting, sponsored by the Manufacturing Committee, a very interesting paper was presented on refinery cost accounting. Possibly if this were followed up, and the cost of gasoline brought more forcibly and continuously to our attention when making sales, the quality of market prices would be improved. Our marketing committee, also, has presented some valuable suggestions with respect to the level of value of our product that would offer a fair and reasonable division of the spread between retail prices and raw material costs at various times.

Distribution of Sales

Another problem of unprofitable prices may be involved in the distribution of our sales. Possibly too great an effort is expended in obtaining distribution in districts far from the point of manufacture and that this distribution when finally achieved is maintained only at a loss. Many districts, among them Kansas, Louisiana, Arkansas and California, for example, have a scale of refinery prices that recognizes differences in territorial distribution as an element of price. Group 3, with prices of importance to us all, makes no distinction of this character. We have no means of knowing just what share of shipments moves to various states, nor can we watch the shifting of areas of distribution. At one time the association attempted to gather data of this character and post us in this regard. The effort was abandoned due to the failure of the members to supply their individual records. In 1926 the Government found refineries of the Mid-Continent states shipped the following per cent of total gasoline shipments to points within the Mid-Continent area. Arkansas, 46 per cent; Kansas, 52 per cent; Louisiana, 46 per cent; Oklahoma, 40 per cent, and Texas, 72 per cent. The latter, undoubtedly influenced to a great

BUREAU OF MINES REPORT FOR JANUARY

Crude Petroleum—According to reports received by the Bureau of Mines, Department of Commerce, the production of crude petroleum in the United States during January, 1930, amounted to 79,453,000 bbls., a daily average of 2,563,000 bbls., which is a decline of 29,000 bbls. from the previous month.

Prdouction in California showed a small increase over December, Oklahoma was unchanged, but Texas declined from a daily average of 808,000 bbls. in December to 795,000 bbls. in January. The decrease in Texas occurred mainly in the North Texas and Panhandle areas, which more than compensated for a material increase in the Gulf Coast area following the bringing in of flush production at Refugio, Barber's Hill, and other fields, and in the Darst Creek Field of Guadalupe County.

Stocks of crude petroleum east of California amounted to 379,826,000 bbls., as compared with 381,391,000 bbls. the previous month, a decrease of 1,565,000 bbls., all of which was withdrawn from refinery stocks. Stocks of light and heavy crude in California increased 1,024,000 bbls., making a net decrease for the entire country of a little over 500,000 bbls.

Stocks of refined products, principally gasoline, increased 5,514,000 bbls. during the month. Total stocks of all oils continued to rise to new high levels and amounted to 687,049,000 bbls. on January 31, a gain of 4,980,000 bbls. during the month.

Refined Products

Runs to stills of domestic and foreign crude petroleum amounted to 80,163,000 bbls, a daily average of 2,586,000 bbls., which is a decline of 16,000 bbls. from the December average.

The daily average motor fuel production for the month was 1,182,000 bbls. as compared with 1,209,000 bbls for December. Exports were lower (5,458,000 bbls. against 5,964,000) and stocks rose to 49,676,000 bbls. on January 31 from 43,132,000 bbls. on hand at the beginning of the month. The daily average indicated domestic demand for motor fuel amounted to 830,000 bbls., which is a decline of 37,000 bbls. from December, but on increase over a year ago of 89,000 bbls., or 12 per cent. At the current rate of total demand, the motor fuel stocks on hand at the end of January (49,676,000 bbls.) represents 49 days' supply as compared with 41 days' supply on hand a month ago and 46 days' supply on hand a year ago.

The production of kerosene was lower, exports were higher, and stocks declined. The production of gas oil and distillate fuel oils, reported to the bureau for the first time, amounted to 6,707,000 bbls., that of residual fuel oils to 26,506,000 bbls.

The refinery data of this report were compiled from schedules of 345 refineries, with an aggregate daily recorded crude oil capacity of 3,661,000 bbls., covering, as far as the bureau is able to determine, all operations during January. These refineries operated at 71 per cent of their recorded capacity, given above, as compared with 346 refineries, operating at 72 per cent of their capacity in December.

extent by exports. Since then the distribution has probably altered to some extent. The point I wish to make, however, is that a large share of the business of all Mid-Continent groups of plants moves within a limited area, whereas, the Group 3 market applies the same price on what might be termed local sales that it applies on sales to zones of intensive competition with other groups of plants at distant points. I have no recommendation to make in this regard but believe the matter presents a problem. Under no circumstances, however, and regardless of the past example of California, should there be fostered or encouraged surplus that would necessitate the "unloading" or "dumping" of the products of quantity production to the detriment of competing groups of plants.

Contract Terms

For years one of the important problems of the refining industry has been the contract terms under which it disposes of a large volume of its gasoline. Practically every contract of this nature ever written is more advantageous to the purchaser than the seller. It seems unnecessary to state that a contract that is inequitable is wrong in principle. The volume of product ultimately consumed and the terms of contracts are not related. Just so much gasoline will be consumed each year. At the present time assurance with respect to quality and quantity are minor factors of the contract in comparison with price. In my opinion stabilized margins are essentially correct provided the open market contributes to that stabilization. Probably the only solution to the contract problem rests with the alignment of production and demand and the resultant maintenance of a reasonable refinery price.

Changes in Gasoline

I have previously mentioned the increase in demand for high-compression fuels as one of the outstanding developments of the year just past. This question of quality involves many of our problems and probably in a large but unknown degree is responsible for both overproduction and loss of profit.

The types of cars have changed and are still in process of realignment, there has been an increased demand for power, for pick-up, and a decided change in demand for antiknock or other qualities in motor fuels. Unquestionably standard U. S. Motor is of far less importance at the present time than in the past. Changes in the nature of product to meet consumers needs present nothing new, for refiners have often been called upon to readjust the properties of gasoline. It seems to me, however, that a lack of definite knowledge with respect to quality demand may be responsible in a degree for depression in gasoline values.

We may simultaneously overproduce with respect to a certain grade of product and underproduce with respect to another grade. The net result of these transactions may be overproduction with respect to total volume and that volume may depress the value of all grades of product. Under a depressed refinery price there is a wide spread between tank car and tank wagon prices that frequently allows the jobbing trade to purchase grades of gasoline that are superior from the standpoint of consumers' preference and sell this product in competition with an inferior product. This, of course, adds to the volume of overproduction of the inferior grade and tends to further depress the open market price which is so important. In discussing this with one refiner he explained this situation by saying it was caused primarily by some refiners selling a better than U. S. Motor grade of gasoline through retail outlets at the prevailing U. S. Motor price, that jobbers were obliged to meet this quality competition, and with wide margins were in position to do so.

It seems to me we could profit by better knowledge of the fluctuations in current supply, demand and stocks that made some distinction between grades of product. We have absolutely no information of this character despite the fact that for a long time we have known and frequently mentioned that gasoline is no longer simply gasoline. We have even attempted to coach the consumer in this regard while at the same time we have neglected to reach out for information regarding quality of importance to ourselves. Under present conditions the industry might easily make U. S. Motor a drug on the market and have no knowledge of what was taking place.

Gasoline Specifications

Quality is of such importance that one real problem we might examine is the inadequacy of the present specifications. Back in 1915 the Federal Trade Commission stated: "If a law were enacted which would provide that only such elements shall be sold in interstate commerce as gasoline, it is believed that it would lead to a desirable measure of classification and uniformity in quality." I quote this simply as an illustration of the long standing knowledge regarding the importance of quality and specifications.

It is true we have specifications and that these have been changed from time to time. In my opinion, specifications should be drafted in a manner that makes a quality distinction based on the ability of grades of product to perform certain services in their consumption. We have all encountered, from time to time, surveys that have attempted to determine the reasons that impelled motorists to purchase gasoline at a definite source. I have yet to note a survey of this character that failed to be impressive with respect to the consumers high regard for quality, nor one that failed to rank quality of far greater importance than price. We should assist the motorists to weigh the values of quality in comparison with price by specifications and grades of product adequately suited to their needs. This would also enable us to put into our product the qualities that will win for it the permanent loyalty of its consumers.

The most highly developed ethics in industry have been attained in mechandising by mail. There it is an integral part of business policy. The refining industry, however, is just now making its first faint efforts to eliminate the old caveat emptor policy in the sale of gasoline. "Let the purchaser beware" has been an antiquated policy in other lines of progressive industry for many years and we might profitably direct our efforts toward that end. No steps we could take, in my opinion, would be more direct than the establishment of specifications more suited to the motorists' needs than the meager ones in use at present, and the translation of technical descriptions into terms of motor car performance that would be intelligible to motorists, to the jobbing trade, and to our own employes at the pumps.

One great problem of quality in gasoline lies in the fact that in its natural state the product is ill-adapted to identification. We cannot gauge real differences in value outside the laboratory or by elaborate tests. Some companies have adopted a plan of identification of their product based on artificial color despite the fact that the registration of color as a trade mark has been denied. While it may be far-fetched and quite impractical the idea presents itself that color might be used advantageously as an index to grades of product and artificial color made an item of specifications.

I have but briefly sketched a few of the many problems we face today. There are many other matters such as new uses, aviation, advertising, exports, brokers sales, manufacturing ethics, legislation, public relations, taxation, research, products other than gasoline, etc., that involve problems we might profitably discuss. In my opinion, however, our most direct course toward the achievement and maintenance of a reasonable profit in our business involves the quality, quantity, and price of gasoline.

Many inventions are devised which have some interest or even usefulness, however, only a relatively small percentage have a commercial value. Somewhat in the same manner it seems likely that in a consideration of the very many problems into which we may divide our one great problem of reasonable profit there may be but relatively few things we decide can be placed in practical operation. This however, should not discourage us. On the contrary if we can concentrate our efforts and forcefully and vigorously solve a single problem we should be gratified. Surely among our many difficulties we can arrive at some definite plan of best and prompt procedure that will redound to our industrial advancement. I am sure that the successful solution of any problem, no matter where we may find the opening wedge of opportunity, will be far-reaching in its effect on other and apparently remotely connected ills. We should bear in mind, however, that competition must be unrestrained, that freedom of individual action must be unimpaired, and that unity of action based on knowledge is the real power behind co-operative effort.

DECOMPOSED CHERT FORMS MUD MATERIAL

(Continued from Page 85)

mud mixture is finer than 200 mesh, and most of it finer than 300 mesh.

Opalite is sacked by the use of a special sacking machine in paper bags, each containing about 80 pounds of the material.

Each machine in the mill is driven by its separate electric motor and the plant is so designed as to permit of any one of the several products being made as desired.

Opalite has been used as a pigment for paint and for this purpose must be a very fine material of smooth texture and these same qualities are needed in an admixture for rotary mud.

Tests Conducted

Tests have been conducted with Opalite to demonstrate its mud qualities, one of them being to take four quarts of the minus 300-mesh powder in its dry state and place it in a large container and add one quart of water. When this water has been thoroughly mixed into the powder a very viscous mud is formed that has a weight equivalent to 16 pounds to the gallon.

This mud when collected on a spatula and held at height of about 30 inches above the mixing vessel formed long strings that had about the same appearance as a good grade of lubricating oil. It held together in this long thin string and in the direct sunlight was fairly transparent.

It feels sticky and can be rubbed between the fingers until the moisture is driven out when it again becomes a soft powder.

The dry powder is soft and lacks that gritty feeling so common to most silicas and sands. This is attributed to its amorphous character.

From its geological history it would seem that the original silica was first taken into solution in the sea water and extracted from that water by the diatoms that inhabited the sea, and deposited as chert. This chert was then again dissolved by ground waters and this bed of material is the silica portion of that rock. So from a crystalline form the silica has been changed to an amorphous form of the same material, and very finely subdivided in the process of changing.

Arrow Heads Give Further Evidence

Further proof of this theory seems to be given by the discovery of arrow heads and tomahawks composed of a material similar to Opalite buried under a few feet of soil near Seneca, Mo., located in the southwestern corner of that State and not very far north of Rogers, Ark.

This find is described in Oklahoma Geological Survey Bulletin 28, prepared by E. S. Perry, who states that these arrow heads and tomahawks show a decided concoidal fracture which is so characteristic of chert that it seems almost positive evidence that they were originally made from chert or flint and buried in the soil where the change took place.

It hardly seems reasonable to assume that the Indians would have made arrow heads or tomahawks out of this very soft rock and carefully buried them. If they had been made from amorphous silica and left exposed to the weather, it is more than likely that they would have been destroyed. Further, the surface of these relics as well as the sharp edges show that they were not polished or ground and it is not possible so to handle this amorphous silica and produce the same effect. All of which seems to indicate that chert can be changed by this weathering process and is conclusive evidence of the origin of the commercial deposits.

Same Characteristics Remain

It is stated that silica can be ground into an impalpable dust and still will have the same characteristics as found in the coarser particles. This property adds to its porosity and it also gives it a colloidal character and a mixture has been made that remained in the fluid condition, or in suspension for 48 hours without appreciable settling.

In a ditch that runs from the mill at Rogers it was noted that particles of the Opalite were in suspension in the water for a distance of several blocks and the velocity of the stream was very slow, in fact near its lower end the water was hardy moving.

To test the flocculent property of this material an ordinary galvanized wash tub was filled with clear water and the water given a rotating motion. Then about a pint of the Opalite mud was poured into it. This mud immediately spread through all of the water in the tub and made a milky mixture. This would tend to show that this material will flow with a current so long as any is maintained and should be carried into very small openings in a formation.

Used in Oklahoma City Field

It has been used with success in several wells in the Oklahoma City Field and also was used with success in mudding off a high-pressure gas well in the Turner Valley Field in Canada. Drilling contractors who have used it pronounce it an excellent admixture for making a heavy mud and it also possesses the properties of viscosity and is a colloid and therefore will remain in suspension for a long period of time or in a very slow moving stream of water.

The company handling this material is composed of R. C. Jones of Cushing, Okla., who has had considerable experience in the production and drilling business; O. F. Mayfield, formerly of Tonkawa, Okla; H. R. McKnight and W. G. Bisbee. The corporation is a closed one and was incorporated under the laws of Delaware for $750,000. The capital stock was recently raised to $1,000,000 and the additional money will be used in finding new markets for Opalite.

The problem of admixtures for rotary mud is receiving a great deal of study by the drilling contractors and production companies in the active fields and this is the first of a series of articles that The Oil and Gas Journal will publish describing the various materials now being used for this purpose. The next article will appear in an early issue followed as rapidly as possible by the others and the final article will deal with several phases of the mud problem and a summary of the conditions encountered in rotary drilling and some suggestions as to their possible solution.

DEATH OF L. C. DUFFIELD

Lewis C. Duffield, a veteran operator in the Eastern, Central West and Mid-Continent fields, died in Tulsa last week, at the age of 79. Mr. Duffield was born in Utica, Venango County, Pennsylvania. He operated in the western Pennsylvania fields including the Bradford Field until he came to Oklahoma, or Indian Territory, as it was then, in 1906. He operated in the Chelsea fields and the territory around Tulsa. In 1911 he went to Illinois where he opened the Hebron Pool. Returning to Oklahoma, Mr. Duffield was a producer in Bird Creek, southeast of Cushing and around the Jenks district.

The deceased is survived by Mrs. Duffield; a daughter, Mrs. R. A. Griffith of Tulsa, and the following sons: Carl E., of Tulsa; Merle, of Chicago; Earl, of Abilene, Tex.; Clarence, of New Castle, Tex.; and Homer, of Tulsa.

The funeral and burial were held in Tulsa.

IN THE OKLAHOMA CITY FIELD

more than ⅔ of the Drilling Contractors *choose* the

"BJ" *Reamer* DISC BIT

Byron Jackson has consolidated the best features of several tools into one eminently superior standard BJ product—of which the BJ Disc Bit is a worthy example.

CONTRACTORS must have the bit which digs a straight fast hole, at the lowest possible cost per foot.

The BJ Reamer Disc Bit has to date been used by the leading contractors in the Oklahoma City Field to drill 104 surface holes — a total depth of 27,752 feet.

Ask for Bulletin No. 104, which contains complete descriptive information.

Oil Tool Division of

BYRON JACKSON CO.

Established 1872

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TULSA OKLAHOMA CITY HOUSTON FORT WORTH NEW YORK CITY

MEN KNOWN IN OILDOM

Wirt Franklin

Wirt Franklin, president of the Wirt Franklin Petroleum Corporation, and a leader in the effort to have a tariff imposed on imports of foreign crude and its derivatives, was born in Richmond, Mo., March 22, 1883, passed his boyhood in Macomb and Lacon, Ill., and graduated from the Lacon High School. He learned shorthand and was employed as stenographer with the commission on Indian Affairs, House of Representatives, Washington, D. C., at the same time attending the law school of Columbia University, now George Washington University. Following this he obtained an appointment as stenographer with the Dawes Commission to the Five Civilized Tribes in Muskogee, Okla. (then Indian Territory), continuing his law studies. While with the Dawes Commission Mr. Franklin had charge of the preparation of the Choctaw and Chickasaw rolls.

Mr. Franklin resigned from the commission in 1905 and formed a law partnership with S. A. Apple. The firm remained in Muskogee until 1906, when it moved to Ardmore, Okla. Mr. Franklin was admitted to the bar on January 24, 1907, in the United States Court for the Southern District, Indian Territory. He continued the practice of law until the opening of the Healdton Field in 1913.

Mr. Franklin's first oil venture of consequence was during his association with Mr. Apple, Ed Galt and Roy Johnson in the Healdton Field. Following the deal with J. M. Critchlow wherein the discovery well was drilled, the four men organized the Crystal Oil Company, to which they assigned their holdings, and in 1916 sold it to Harry Sinclair for $2,000,000. At the same time Mr. Franklin, Mr. Apple and J. W. Harreld (later United States Senator) organized the Apple-Franklin Oil Company, afterward sold for $350,000. Mr. Franklin then operated independently until the organization of the Wirt Franklin Petroleum Corporation in 1927.

Mr. Franklin is president of the Independent Petroleum Association of America, president of the Ardmore Producers Association, charter member and former president of the Ardmore Lions Club, active in the affairs of the Dornick Hills Country Club, vice president and director of the Chickasaw Lumber Company, and a director of the Security National Bank, Oklahoma City, and the American National Bank, Ardmore.

PERSONAL PARAGRAPHS

H. F. Bossert, assistant general superintendent of the Midwest Refining Company, is in Colorado and New Mexico.

Linn Park, representative of the Portable Rig Company, Houston, Tex., has returned from a short business trip to Tulsa.

* * *

W. K. Evans, manager at Chicago for the Shell Petroleum Corporation, is away on a vacation trip of two weeks in the South.

* * *

H. Jamison, representing the Insley Manufacturing Company, Indianapolis, Ind., is spending some time in the Mid-Continent Field.

* * *

George J. Fix, representing the Baldwin Chain & Manufacturing Company, spent some time in the Oklahoma City Field the past week.

* * *

W. L. Connelly, vice president, Sinclair Consolidated Oil Corporation, is on an extended trip inspecting company holdings in South America.

* * *

John A. Ritter, formerly with the Twin State Oil Company, has returned from California to become associated with the Sun Oil Company at Dallas, Tex.

* * *

E. J. Sullivan, president of the E. T. Williams Oil Company, has returned to his Casper, Wyo., offices from Washington, D. C., where he has been for some time.

* * *

E. B. Harris, formerly in the lubricating department of the Skelly Oil Company at Eldorado, Kans., is now with the Shell Petroleum Corporation at Wood River, Ill.

* * *

F. Kirk Johnson, of Gibson & Johnson, Fort Worth, Tex., operators, who recently started drilling a wildcat in western Michigan, was a Muskegon visitor last week.

* * *

Norman W. Hendershot, of California, passed through Tulsa last week en route to Oklahoma City to spend some time at the plant of Spengler Tool Company.

* * *

Floyd Kiser, formerly in the Casper, Wyo., office of the Parkersburg Rig & Reel Company, is now in Parkersburg, W. Va., where he will remain for the time being.

* * *

H. W. Coleman, assistant sales manager of the Simms Oil Company, Dallas, Tex., has been making a trip through Oklahoma, and spending some time at Tulsa on company business.

* * *

E. C. Whitcomb, formerly southwest representative for the Erie Stove & Manufacturing Company, has been appointed manager of the new sales department of the Fort Worth Gas Company.

* * *

John McFadyen, director and vice president and general manager of the western division of the Ohio Oil Company, has left Casper, Wyo., for California where he will inspect company operations.

* * *

J. J. Taxman, president of the Taxman Refining Company, of Wichita Falls, Tex., was in Chicago last week at the office of the Atlas Petroleum Company, distributor of the refinery products.

* * *

J. E. Poole, southwestern representative of the Vulrox Manufacturing Company, has returned to his home in St. Louis, Mo., following a visit at Houston, Tex., with the Mid-Continent Supply Company.

* * *

Paul Williams, for the past five years in the engineering department of the Pure Oil Company at Tulsa, has been transferred to Houston, Tex., where he has been made chief engineer of the Gulf Coast division. Mr. Williams succeeds R. W. Fulweiler, who has been transferred to the Fort Worth, Tex., office.

* * *

Dr. Bailey Willis, professor emeritus of geology in Leland Stanford University at Palo Alto, Calif., lectured to West Texas geologists at Midland, Tex., March 6. Doctor Willis is returning from a trip to Africa, which followed a trip to Chile, and is making a brief stop at Midland to visit his son. Robbin Willis, independent consulting geologist of that place. Doctor Willis' subject was "African Problems." He is the author of several text books on geology.

Niels Matheson, formerly field engineer to the British Burmah Petroleum Company, Ltd., has recently arrived in England after spending some months in the United States.

* * *

C. H. Eden, western representative for The Lees-Bradner Company, of Cleveland, Ohio, with offices in Los Angeles, Calif., was in Tulsa last week while making a trip through the Mid-Continent and Gulf Coast Territory.

* * *

D. L. Thomas, Oil City, Pa., agent for the Southern Group of Pipe Lines, was a Pittsburgh, Pa., visitor last week, at which time the Southwest Pennsylvania Pipe Line Company declared the usual quarterly dividend of $1 a share.

* * *

Harry Wolfe, district manager for the Parkersburg Rig & Reel Company in the Rocky Mountain district with headquarters at Denver, Colo., is now in Casper, Wyo., handling details in connection with the closing of that branch.

* * *

Eugene Ritter, formerly assistant refinery superintendent of the White Eagle Oil & Refining Company refinery at Fort Worth, Tex., is now superintendent of the plant which is now owned by the Magnolia Petroleum Company. Price Roberts is acting assistant superintendent.

* * *

Jeff D. Farish, general attorney of the Navarro Oil Company, Houston, Tex., has resigned to enter general law practice. Mr. Farish has been connected with the Navarro Oil Company since March, 1926, before which he was in the legal department of the Humble Oil & Refining Company.

* * *

W. E. Currey, manager of the central division of the Dixie Gas & Fuel Company interests in East Texas, which includes Jacksonville, Lufkin, Nacogdoches, Livingston and Timpson, has been promoted to manager of the Sabine district, which includes Beaumont and Port Arthur. Mr. Currey has removed from Nacogdoches to Beaumont. J. L. Langston of Marshall will succeed him at Nacogdoches.

* * *

D. D. Christner, district chief geologist of the Continental Oil Company, Fort Worth, Tex., drove to Uvalde to attend a meeting of the San Antonio Geological Society. The geologists of the San Antonio district and near-by districts made a field excursion over Uvalde County to study cretaceous and tertiary formations. George Vorbe, vice president of the West Texas Geological Society, headed a group of Midland petroleum geologists who made the trip to Uvalde.

* * *

A party of Midwest Exploration Company officials has been making an extensive tour of Texas and New Mexico oil fields. The party was composed of H. C. Bretschneider, president of the company, from Denver, Colo.; G. B. Jenkinson, vice president, also from Denver; and Clair Coffin, chief geologist of the Denver office. Those from the Amarillo, Tex., offices were J. H. Clark, vice president; J. H. Moyer, general superintendent; and H. T. Morley, geologist.

* * *

Robert D. Petty, of Fort Worth, Tex., has sailed for Russia where he will be employed as chemical engineer for the Soviet government. Mr. Petty received his Master's Degree in Chemistry and Engineering at Columbia University and was for some time with the Associated Oil Company. For the past three years he has been chief chemist and chemical engineer with Max B. Miller & Company, New York. His new duties will be concerned with the problems of the Russian oil industry.

* * *

Officials of the Standard Oil Company of New York and its chief Mid-Continent subsidiary, the Magnolia Petroleum Company, made a visit in Fort Worth, Tex., last week, looking over the latter company's two refineries, one of which was lately acquired when Magnolia purchased the White Eagle Oil & Refining Company. Herbert L. Pratt, chairman of the board of the Standard Oil Company of New York; C. F. Meyer, president; Arthur Corwin, in charge of the production activities of the company, and E. R. Brown of Dallas, Tex., president of the Magnolia Petroleum Company, headed the party.

PHYSICAL LABORATORY

All steel used in the production of Hughes Rock Bits and Cones is thoroughly tested in the Hughes Physical Laboratory.

This laboratory is completely equipped for the accurate making of tensile, bend, impact, fatigue, and abrasion tests—and insures the performance of the finished product.

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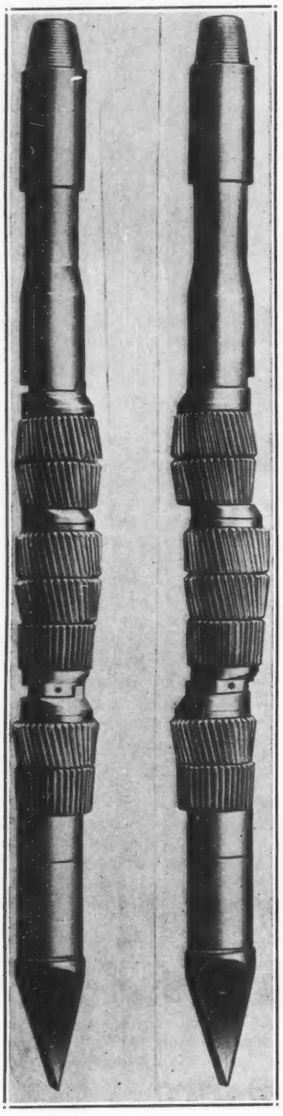
Oklahoma City, Okla.	TEXAS	New York City

EQUIPMENT AND SUPPLIES

ALCO UNDERREAMER HAS IMPORTANT ADVANTAGES

The main features of the new Alco underreamer, made by the Alco Oil Tool Co., Compton, Calif., are said to be positive expansion and release, depending solely on the mechanism of the tool itself; a long reaming surface measuring five to six times the diameter of the hole; longer runs in the hole, fast cutting in any formation and freedom from balling up.



Closed Open

The three sets of roller cutters rotate on eccentric bushings mounted on the mandrel. The bushings from the middle set of three cutters are keyed to the mandrel and held at all times in an off-center position, while the bushings carrying the upper and lower sets of cutters are free to rotate on the mandrel approximately half a turn.

The mechanism controlling expansion and release of the cutters consists of specially designed latches that are said by the manufacturers to be absolutely positive and reliable in action at any point in the hole. When not in operation, or when rotated to the left to withdraw from the hole, the three sets of cutters assume a closed position that allows ample clearance to pass the tool through the casing. When the underreamer is rotated to the right, as in operation, the top and bottom sets of cutters move outward to an eccentric position diametrically opposite that of the center set, and are held there securely by the latches as long as rotation to the right continues.

The construction of the Alco underreamer is such that it occupies only approximately two-thirds of the area of the hole, leaving ample space for circulation, and minimizing the possibility of balling up.

KEROTEST VALVES STAND KETTLEMAN HILLS TESTS

Drilling valves and flow-line valves of 6,000-pound test made by the Kerotest Manufacturing Co., Pittsburgh, Pa., have been used successfully in controlling the enormous volumes and pressures of the Kettleman Hills Field, where pressures have registered up to 4,000 pounds per square inch. The company will show a complete line of its oil field valves and fittings together with refinery valves at the oil equipment exposition in Los Angeles next week.

The Kerotest high-pressure oil-saver will be shown also. This is a comparatively new development, which has been used during the last year by many operators in Texas, Oklahoma and Canada for drilling in and deepening wells under high pressures.

SHAFFER INSTALLATIONS ATTRACT MUCH INTEREST

Installations of cellar and christmas-tree equipment made by the Shaffer Tool Works, Brea, Calif., at Kettleman Hills and other high-pressure fields have stirred much interest in the Shaffer method of control. Many oil men are reported to have visited the Belridge well at Buttonwillow, where one of the heaviest type cellar set-ups was used.

The Shaffer cellar control gate, a recent addition to the Shaffer line of high-pressure equipment, will be featured at the Oil Equipment Exposition in Los Angeles next week. With this device, it is possible, according to the manufacturers, to obtain a shut-off when there is pipe in the hole, in the same manner that a drilling valve closes open hole. As a safety device, the gate is attracting attention, especially in wildcat fields and in known high-pressure territory.

AXELSON OFFERS NEW OIL-FIELD EQUIPMENT

The gauge division of the Axelson Manufacturing Co., Ltd., has prepared a complete line of Standard, United States, Society of Automotive Engineers thread gauges, and A.P.I. gauges, also plain cylindrical gauges and high-speed ground taps. Another new piece of oil field equipment put on the market by the Axelson organization is the Gill Long Stroke.

Both the Axelson line of gauges and the Gill Long Stroke will receive their initial showing at the oil equipment show in Los Angeles next week. The Gill Long Stroke will be installed on the end of a walking-beam to demonstrate the feasibility of using a long stroke at a saving of power and with an increase in pumping efficiency.

"Single-flash Vacuum Distillation" and "Water Distribution in Cooling Towers" are among articles in the current number of Heat Engineering, published by the Foster Wheeler Corp., New York.

GIVES ACCURATE FINISH

The medium heavy duty vertical honing machine made by the Barnes Drill Co., Rockford, Ill., is especially adapted for finishing Diesel engine sleeves and cylinders, producing smoother finish and greater accuracy. In this honing machine the manufacturers have incorporated its standard fundamental characteristic feature, namely, the reciprocating and rotating 10-spindled spindle, hydraulically controlled as to length and rapidity of stroke. The hydraulic motion for reciprocating simultaneously with the powerful geared drive for rotating the spindle and hone, gives evenness and uniformity of honing over full length of cylinder. The length of stroke may be set for just the right amount of overrun of hone at each end of cylinder.

W-K-M SIDE BOOM UNITS HANDLE OIL-FIELD JOBS

Among oil field jobs handled by the W-K-M side boom units which are being introduced by the W-K-M Co., Inc., Houston, Tex., are excavating work, backfilling ditches, laying or loading pipe, cleaning slides, setting line valves, and erecting gas holders. These units are for McCormick-Deering and Caterpillar tractors. They are applicable on tractors equipped with Model DH Trackson tracks.

The W-K-M side boom units handle the largest sizes of pipe, loading and unloading, laying and lifting, besides performing much other work in connection with pipe line projects, such as backfilling, cleaning ditches, etc. One of these units can handle singly many jobs which formerly required special machines.

The collapsible boom, hinged at the base, permits extensions to various lengths, besides raising and lowering. Ball-and-socket joints are provided to take care of track distortions. The operator has full use of the tractor drawbar at all times.

Attachment to the tractor is accomplished in a few hours without cutting or drilling.

A side boom unit for Hillside 30 model Caterpillar tractor and a side boom unit for 10-20 McCormick-Deering tractor will be featured by the W-K-M Co. in its exhibit at the Los Angeles oil equipment show next week.

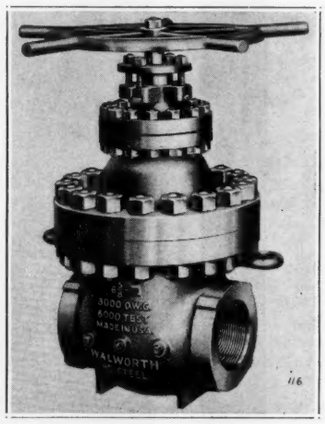
PRINCIPLE OF MODEL B-2 DRILLING BIT UNCHANGED

Improvements have been made in the Model B-2 drilling bit, manufactured by Wieman-Kammerer-Wright Co., Inc., Los Angeles, Calif., but the principle remains the same. It cuts a core and then destroys it. The outermost blades contact the formation first, leaving a core that is broken down by the inner teeth as the bit is rotating. The core which extends upward within the bit acts as a guide and prevents the bit from deviating from the center line. This type of bit can penetrate the formation faster because only a small contact is made with the solid formation, and the core is much easier to destroy owing to its partial isolation from the solid earth; also because of this design, the bit is made with much thinner teeth without sacrifice of strength. This feature makes it especially adapted to drilling with light weight. The extra reaming blades above the cutters keep the hole to gauge.

Surveys of hole drilled with the Model B-2 bit shows that they are less than 3° off center. Many of these wells were below 6,000 feet. The Model B-2 bit will be featured in the W-K-W display at the Los Angeles oil show.

INNOVATION OFFERED IN OIL-DERRICK EQUIPMENT

An innovation in oil field equipment is provided in the Walworth drilling gate and line valves, manufactured by the Walworth Co., Boston, Mass. The hand wheels are of a new "Tiller" type with protruding spokes, which makes for ease in opening and closing the valves. They are painted a brilliant red, while the valve bodies are painted dark green, the combination giving a color scheme suggestive of the christmas tree hookup.



Sigma steel drilling gate valve.

The Walworth Co. has had Sigma steel on the market for several years for high-pressure, high-temperature service, but the line of Sigma steel valves for top-of-the-well service is entirely new. It was brought out with the special view of offering a new factor of safety at a point in oil production operation where proper control has always been a problem.

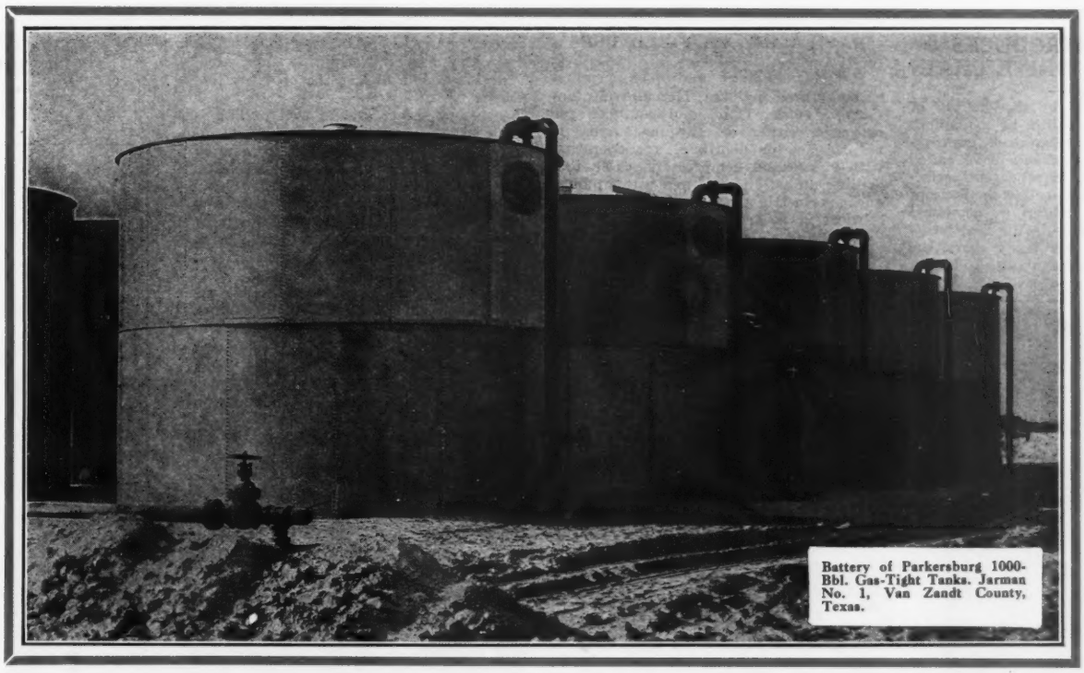
The new line of Sigma steel drilling gate and line valves and christmas tree fittings will be shown at Los Angeles next week. The valves cover pressure ranges from 500 to 30,000 pounds working pressures and are available for all casing sizes.

GAS DETECTOR REDUCES DANGER OF EXPLOSIONS

The Jones gas detector, distributed by the Mine Safety Appliances Co., Pittsburgh, Pa., was developed by G. W. Jones, explosive chemist of the United States Bureau of Mines, and is said to be the only instrument for practical field use which shows the approximate explosive content or an oxygen deficiency of atmospheres in confined spaces.

Numerous explosions and apparent hazards in sewers, manhole entrances to gas lines, electrical conduits, etc., prompted the development of the Jones gas detector. Many gases and vapors, including illuminating and natural gas, blast furnace gas, carbon monoxide, hydrogen, gasoline, naphtha, cleaning compounds, alcohol, etc., when liberated in air may form explosive mixtures. In high concentrations, these gases and vapors will produce oxygen deficient atmospheres.

The Jones gas detector not only indicates how dangerous the confined atmosphere is and how near it is to being explosive, but it is the only instrument commercially available which shows whether the sample under test is within the explosive range, below the lower explosive limit, above the upper explosive limit or whether the sample contains a low percentage of oxygen, caused by an excess of inert gas such as nitrogen and carbon dioxide.



Battery of Parkersburg 1000-Bbl. Gas-Tight Tanks. Jarman No. 1, Van Zandt County, Texas.

Gas-Tight Tanks Bring Economy

in the new Van Field

All Parkersburg Tanks bear this quality mark. Bolted Steel Tanks from 30 to 10,000 bbls. capacity. Also Bolted Aluminum Tanks for sulphur crudes. Write for information.

PARKERSBURG Bolted Steel Tanks are conserving oil in the new Van Field, Van Zandt County, Texas, as in nearly every active oil field in the world. Wherever oil is produced, this insignia of Quality is found, reminding the world of dependable tanks and a tank service preferred by careful buyers.

By reducing evaporation, Parkersburg Tanks with Gas-Tight construction and Vapor Pressure Fittings bring bigger profits to producers. By maintaining your oil at maximum volume and gravity, Parkersburg Quality Tanks are an economy that carries through to your bank account.

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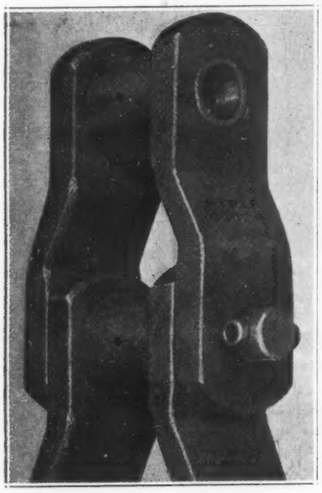
EQUIPMENT AND SUPPLIES

LINK-BELT INTRODUCES STRONGER DRIVE CHAIN

As necessity calls for the drilling of deeper hole, the full line of machinery used for drilling has required improvements. These improvements have called for heavier designs, more careful selection of materials, and better methods of machining of these materials, combined with extraordinary care in the heat treatnent of the parts. For many years, the Link-Belt Co., of Indianapolis, Ind., has



Hyper SS-124.

been a supplier of power transmission chains for drilling purposes, and it recognized the need for a chain which would combine strength with durability. It is not difficult to design a heavy chain or a strong chain, but it is difficult to design a chain which combines maximum strength and maximum durability.

After a study of operating conditions in the fields, and chain materials most suitable, Link-Belt is now offering to the oil industry standard pitch and standard roller diameters and widths. The new Link-Belt Hyper line of chains is said to incorporate maximum strength with maximum durability. It is made entirely from alloy steels.

The pins are forged from alloy steel stock, and after heat treatment the surfaces are accurately ground. The bushings are machined from alloy steel stock, and after heat treatment are ground, not only on the outside diameter, but also in the hole which engages with the pin. The internal grinding of the hole is a novel feature in chain construction.

The side bars are made from alloy bar stock, with holes which receive the pins and bushings conditioned by an entirely new process in chain manufacture, providing holes which are accurate.

The rollers are made from alloy strip stock, accurately formed into a round shape and are of the so-called "curled" type. These rollers are heat treated. The cotters are of a special type (patent applied for) and are so designed as not to work loose when once inserted and swelled into the holes provided in the pin ends for their reception. The manufacturing tolerances to which the Hyper chain parts are held insure press fits of the highest order, and such fits, combined with careful heat treatment, result in a durable chain.

A conservative rating of the new chains is said to be as follows: Hyper SS-40, 75,000 pounds average ultimate strength, Hyper SS-124, 150,000 pounds average ultimate strength.

HAVE MANY OIL-FIELD USES

Hercules engines and power units, manufactured by the Hercules Motors Corp., Canton, Ohio, and equipped for operation either on gasoline, kerosene, natural gas or distillate, are operating with success on compressors, cable tool drilling units; oil, mud and water pumps and gas-electric power plants. Positive lubrication is accomplished by a forced feed oiling system to all bearing points from a gear-driven oil pump located below the oil level. The extra-capacity cooling system with water jacketing the entire length of the cylinder barrels, designed to direct a stream of water around each exhaust valve, and water pump capable of a high lift, give engine cooling under severe operating conditions. The feature of the company's display at the Los Angeles oil equipment show will be the TXO oil field power unit, which includes the TXO four-cylinder engine, especially equipped for oil field purposes.

OIL-FIELD IMPLEMENTS FOR EXTRA-HEAVY DUTY

Three pieces of oil-field equipment developed by the Regan Forge & Engineering Co., San Pedro, Calif., which will receive their first showing at the forthcoming oil exposition in Los Angeles, Calif., are a nine-sheave crown block, designated as Type C; a six-sheave traveling block, designated as Type 3B, and new high-pressure control equipment.

The Type C crown block has a rated capacity in excess of 600,000 pounds. It has a single deck and is equipped with 48-inch sheaves. Regan engineers state that the new block eliminates the necessity of higher gin poles. It has an extremely low center of gravity, offers greater rigidity and is equipped with two oscillating sheaves that permit true alignment to the traveling block regardless of the size sheave used in the latter. The block is composed of subassemblies, permitting much easier assembly. Small units can be elevated to the top of the derrick.

The Type 3B six-sheave traveling block is constructed of the heaviest materials, has great rigidity and embodies 39½-inch sheaves set staggered fashion with dual bearings for each sheave and integral pin rotating with its individual sheave. The combination of this traveling block with the Type C crown block offers equipment for extremely heavy duty.

The new high-pressure control equipment is designed to meet pressure tests up to 6,000 pounds. The Regan organization has classified its control equipment into three divisions, Type A for normal pressures, Type B for medium pressures tested to 3,000 pounds, and Type C for high pressures tested to 6,000 pounds. In the higher pressure classifications the flanges, spools, couplings, tubing heads, etc., are much heavier in weight and each type is designed in accordance with good engineering standards.

MANY NEW ACCESSORIES DEVELOPED BY RATIGAN

J. P. Ratigan, Los Angeles, Calif., has developed much new oil-field equipment in the last three months, all designed for deep-well pumping.

The No. 42 Ratigan beam hanger is especially designed for use on beams of the types of the Parkersburg I.C.R. and the Emsco "camel back." The bearing floats in a bath of oil which needs replenishing only at rare intervals. A self-adjusting joint at the top permits the hanger to line up with the stuffing-box as soon as the weight of the well is placed on it.

The Ratigan No. 39 pitman stirrup bearing contains an oil reservoir which keeps the bearing constantly lubricated. It is impossible to lose the oil from this device.

The new safety system well pulling is made practical through the No. 12 pivoting type walking beam rocker. By simply removing the pitman the walking beam can be swung around 6 feet. This clears the rig ceiling and walk. The operation is accomplished without any adjustment to the rocker or disturbance of the beam hanger. Ample clearance for traveling blocks is provided by this method.

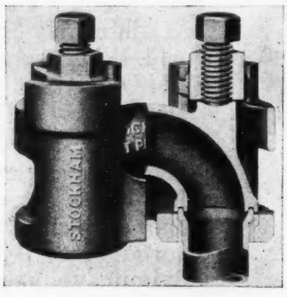
New jack well appliances include reversible polish rod grip, spacing clamps, shock absorbers, pull rod line rollers and polish rod lifting eye.

The No. 24-A Universal oil bath beam hanger combination is especially designed for deep well pumping. The combination includes hanger, carrier bar, hanger rods and eyes, all of which have been tested to over 100,000 pounds capacity. The No. 50 polish rod grip has a holding capacity of 48,000 pounds and the No. 7 polish rod grip has a holding capacity of 32,000 pounds. The sheave wheel is optional equipment for wire lines. The hanger stem contains an oil reservoir of 1 gallon capacity with gravity feed to the phosphor bronze bearing which floats in oil.

All these newly developed appliances will be shown in the Ratigan display at the oil show in Los Angeles next week.

RETURN BEND REQUIRES NO EXPANDED END TUBE

The Stockham Fantz-type return bend, made by the Stockham Pipe & Fittings Co., Birmingham, Ala., does not require expanded end tubes. There is no rolling in or other preparations at the tube bank,



for the tubes employed can be furnished all ready for use by any tube mill. Insertion of tubes is a simple matter of assembly and any individual tube can be removed for cleaning or inspection.

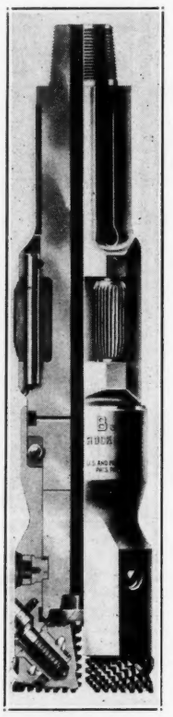
Because in assembly or dismantling there is no damage to the tube ends, tube expense is reduced. Of special appeal to engineers is the fact that the simple assembly makes possible the efficient use of special alloy tubes.

The yoke and U bend are separate units. There is no excess weight in the yoke assembly but there is ample strength. The U piece is the only part which comes in contact with hot oil and while the smooth stream-line flow reduces friction and keeps the bend free from coke, all of which contribute to long life, the U piece can easily be replaced without requiring a new yoke.

Simple devices have been developed to insure ease of operation—a wrench for the toggle bolt, protectors for tube ends to prevent slight scoring, tongs to make handling easy. The Stockham company makes the bend for any specifications for pressure, temperature, tube diameter and tube spacing. The company also manufacturers steel, malleable and cast iron fittings for the petroleum trade.

MANY ADVANTAGES ARE POSSESSED BY BJ BIT

The BJ rock bit, manufactured by the Byron Jackson Co., Los Angeles, Calif., is said by the manufacturer to have the following advantages:



Positive rotation of cones. No flat cones, owing to their being driven directly from the drill pipe.

No worn bushings. Weight is transferred from drive gear to gearing on cones, and not through bushings, bearings or shafts.

No lubricator required.

No twist-offs. The gear reduction from drill pipe to bit body is approximately 2 to 1, insuring that the greater part of the torque is taken up in the gearing, and not entirely through the drill pipe, as in other makes.

No time lost. A ball-bearing assembly is enclosed within the body. When gear teeth are worn, the weight is automatically transferred to the ballbearing thrust. Consequent easing up in rotation of drill pipe immediately gives notice that the bit is not drilling, and should be pulled at once eliminating possibility of wearing out or leaving parts in the hole, and saving much time.

Straighter hole, full gauge. Both cones are positively driven at the same speed. A three-point reamer, designed especially for this bit, is driven directly from drill pipe.

No after-reaming. Owing to the weight being transferred directly on the cones, their natural tendency is to spread apart, making larger hole and eliminating the necessity of reaming after new cones are installed.

Simplicity by reason of fewer parts.

Added safety. All main parts are drop-forged and heat-treated. No castings.

The Byron Jackson Co. will feature this bit in its display at the forthcoming oil equipment show in Los Angeles. A completely equipped rig will include elevators, tongs, disc bits and rock bits made by the company.

TO SHOW BETTIS PRODUCTS

The new Bettis piston, the new Bettis drill stabilizer and Bettis protectors are to be demonstrated by the Patterson-Ballagh Corp. at the oil exposition in Los Angeles next week. The various sizes of protectors and drill stabilizers will be shown, along with numerous products that have seen exceptionally long service or have broken drilling records. The progressive methods of manufacturing the rubber used will be shown at different stages of production. The Rieber Instrument Corp., exhibiting with Patterson-Ballagh, will demonstrate the surveying of oil wells with the Rieber machine.

For better cores in the hardest formations

H. C. SMITH ROCK CORE BIT (Type "F")

—a new type core bit that operates on a new principle and attains new efficiency in coring operations.

—that cores the hardest formations, including schist quartz and chert, as efficiently as the H. C. Smith Type "C" cutter head cores the softer formations.

—has more cutting surface, and the larger cutters insure a better rolling action.

—side reamers insure full gauge hole and tend to steady the bit in the hole.

—direct, straight line circulation that washes directly on and between the cutters.

—improved core catcher that utilizes a combination of spring and slip, assuring a double grip on the core recovered.

—interchangeable with all other types of H. C. Smith cutter heads, making the H. C. Smith Coring Outfit adaptable to all formations from the soft sand chalk and anhydrates to the hard schist quartz and chert.

Los Angeles March 16-23, 1930

Booths 74 and 105

Write or wire us now for complete data on this new coring tool.

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Even when *bent*

IT RESISTS BREAKING OFF!

HERE'S an unretouched photograph of a piece of steel faced with Blackor and then bent as you see it. Note that the Blackor has fractured radially but not tangentically. In other words, the Blackor has not broken or chipped off...even under bending far more severe than would ever be encountered in actual service on a drilling tool.

Blackor does not merely flux over the steel of the tool. It penetrates the steel and the crystals of steel penetrate the Blackor in such a manner that chipping or breaking off are practically impossible and the Blackor cannot crumble away. This exceptional bond ...together with Blackor's next-to-diamond hardness...is why Blackor-ed drilling tools make more hole...in less time...than when faced with any other material.

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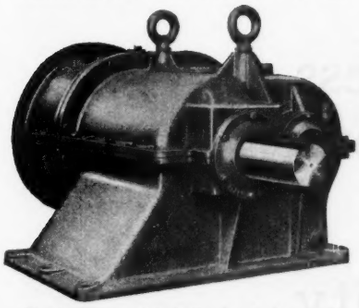
BLACKOR

The Super Abrasion-Resistant Facing

EQUIPMENT AND SUPPLIES

UNITS RECEIVE INITIAL SHOWING IN CALIFORNIA

Two types of oil field power which the Waukesha Motor Co., Waukesha, Wis., is featuring through its new California representative, the Waukesha Industrial Engine Sales & Service Co., and



Waukesha special built herringbone oil field reduction gear.

which it will show for the first time on the Pacific Coast at the Los Angeles oil exposition next week are its WKS power unit and its G 120 horsepower cable-tool rig.

Although designed as a stationary power plant the WKS is readily portable. The engine rates as 120 horsepower at 950 revolutions per minute engine speed. It is direct-connected to a 4:1 herringbone speed reducer of unusual design and great sturdiness and uses either gas or gasoline for fuel. The exhaust manifolds are thoroughly water-jacketed, making them exceptionally safe. Large hand holes are provided to remove scale and sludge which may collect where alkaline water is used. The cooling system of the engine has been augmented to accommodate this extra demand and a large fan and radiator are provided for handling the requirements under severe operating conditions.

A patented Waukesha feature is the "gas-power" mixer for use with natural gas fuel. Run on natural gas, the mixer is sensitive to variations in load and power demand, responds instantly to the governor with a constant proportioning of the gas and air so that maximum fuel economy is obtained under various conditions of load and speed.

A dial gas cock is placed close to the "gas-power" mixer for use in starting while a telegraph throttle control is provided to handle the power demand from the derrick floor. Large air cleaners, electric starting equipment, fully enclosed superoiled governor, full pressure lubrication and Ricardo combustion chambers are features of the engine itself. The structure on which the engine is mounted is unusually deep and rigid, the two steel I beams being connected by cross girders with large gusset plates for reinforcing and stiffness.

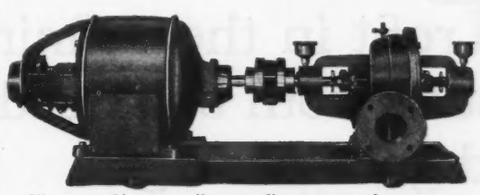
The type G cable-tool rig, representing the six-cylinder line of drilling units, is already well known in Pennsylvania territory. The unique features of this unit are the 120 horsepower six-cylinder engine with combination gas and gasoline carburetors, telegraph throttle control, full pressure lubrication, electric starting equipment and built-in self-oiling governor, all mounted on a sturdy I beam base with sliding gear transmission, belt pulley controls and shooting reel attachment in a moderate size for a moderate weight package.

The gear box is especially designed to give proper pulley speeds and reverse in a simple sturdy mechanical structure. Interlocks prevent the possibility of improper gear operation while the entire control is so arranged that it can be handled from the derrick floor. The engine is rated at 120 horsepower and on some recent locations, these rigs have been drilling 6-inch holes to a depth of 3,900 feet or more on a gasoline consumption of only 80 to 100 gallons per 24-hour day. The gear mechanism and clutch are submerged in oil and fully lubricated at all times; antifriction bearings are used throughout and filtered pressure lubrication wherever possible.

WESTCOS HAVE WIDE RANGE OF USES

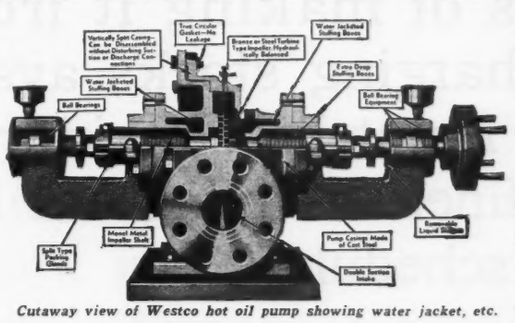
The Westco turbine pump, manufactured by the Westco-Chippewa Pump Co., Davenport, Iowa, is said to have demonstrated its worth in handling reflux overbubble towers, hot oils and other high temperature liquids, emulsion of fuller's or California earth in connection with cleaning of oil, chlorine treating solution, mineral seal oils in recovering gasoline; gasoline, naphtha, etc.; oils where the viscosity does not exceed 600 inches Saybolt universal and brine and water circulation.

The pumps range in capacity from 5 to 250 g.p.m. and are designed to operate efficiently against head pressures from zero to 300 pounds. They are built in single-stage only, it being asserted that the turbine principle provides efficient performance against high heads without the complications of multistage construction. In cases of exceptional pressure Westcos may be operated in pairs, as a two-stage combination.



Westco turbine-type oil pump direct-connected to motor.

The impeller is the only moving part—it being a machined and balanced vane-edged disc which operates in an open channel and without contact with the pump casing. Complete absence of metal contact is stressed by the manufacturer as a feature to prevent wear and insure long pump life. The pump is double-suction type, hydraulically balanced, and side thrust is said to be entirely eliminated. The intake and discharge openings are both on the periphery. The impeller of Monel metal is carried on two outboard ball bearings, each provided with a grease cup. The pump has an unusually wide operating range and the manufacturers say it is not necessary to calculate the pumping head closely when figuring an installation. Rather, it is needful to determine the maximum head only. Then, no matter how much less the head may actually be, the pump will deliver only slightly increased volume, and power requirements will decrease with the head, thus insuring against motor overload.


Vertically Split Casing—Can be Disassembled without Disturbing Suction or Discharge Connections
Cast Circular Gasket—No Leakage
Bronze or Steel Turbine Type Impeller Hydraulically Balanced
Water Jacketed Stuffing Boxes
Water Jacketed Stuffing Boxes
Extra Deep Stuffing Boxes
Ball Bearings
Ball Bearing Equipment
Monel Metal Impeller Shaft
Pump Casing Made of Cast Steel
Removable Lined Wearing Rings
Split Type Packing Glands
Double Suction Intake

Cutaway view of Westco hot oil pump showing water jacket, etc.

Another recent development of the company is the Westco hot oil pump, a sectional view of which is shown herewith. While designed primarily for handling hot oils in petroleum refineries, it is stated that this pump is also suited for handling water and other liquids at very high temperatures, or when pressures run up around 400 to 450 pounds. Fundamentally this hot oil pump is the same in design and principle as the regular Westco, with the exception of such changes as are necessary to cope with high temperatures and pressures.

Because of the simplicity of the Westco and its ability to deliver against high pressures with a small-diameter impeller, the amount of metal required is relatively small. This makes it possible, with economy, to make these pumps of cast steel or special alloy metals for the handling of hot oils or corrosive liquids.

Westcos deliver liquid in an even, nonpulsating flow and there is absence of vibration and of interference with delicate recording instruments.

MADE TRACKSON DISTRIBUTORS

Among new distributors appointed recently to handle Trackson tractor equipment for McCormick-Deering tractors is the J. D. Adams Co., Indianapolis, Ind., who will cover the territory included in the Indianapolis, Fort Wayne, Richmond, Terre Haute and Evansville, Ind., branches of the International Harvester Co. and also that of the Louisville, Ky., branch. McCarthy-Jones & Allen Co., Inc., Nashville, Tenn., have been appointed Trackson distributors for the Nashville territory, and the Option Equipment & Supply Co., Mount Oliver Station, Pittsburgh, Pa., for the Pittsburgh territory. All will handle a complete line of Trackson crawlers, shovels, loaders, bulldozers, cranes, hoists, etc.

BUSINESS NOTES

Aquagel, a conditioning compound said to eliminate many drilling difficulties, will be demonstrated by the California Talc Co. at the Los Angeles oil show next week. A miniature derrick, with Aquagel circulating in the mud ditch, will be shown, and cut-out boards will enumerate various uses of the compound.

The motion picture of the Toledo Pipe Threading Machine Co., Toledo, Ohio, showing "Modern Methods of Handling Piping Jobs," is to be given Friday evening, March 28, in the Central High School, Tulsa. The company will have on display at the same time one of its half-inch to 2-inch portable power pipe machines.

The Bristol Co., Waterbury, Conn., has opened a sales and service office in Los Angeles, Calif., with S. W. Case district manager and W. H. Rogers sales and service engineer. Both have had years of experience in the use of recording, indicating and control instruments.

APPLIANCE SIMPLIFIES PIPE-COATING PROCESS

J. B. W. Gardiner, Inc., New York, have developed a process (patents pending) for the application of emulsion to pipe lines which is said to overcome many difficulties. This process is intend-

Hydralt coating tool, showing lever for locking and unlocking tool on pipe and the coating blades and wet screws at end.

ed to be carried out with a tool (patent also pending) which makes it possible to apply to a pipe a coat of material of any desired thickness with uniformity and no waste. The necessity for skilled labor is eliminated. The labor cost of coating is practically a constant per mile of pipe, regardless of diameter.

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The tool for carrying out this process consists essentially of a metal collar which is quickly clamped about the pipe, and held at a constant distance from the pipe wall by a series of studs. Springs on the side opposite the studs press against the pipe and give it stability. The front of the collar is closed around the pipe by a gasket which fits snugly against the pipe wall and prevents leakage.

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"Properties of Haynes Stellite," the first of a series of booklets embracing Haynes Stellite products, has been issued by the Haynes Stellite Co., Kokomo, Ind.

Even when *bent*

IT RESISTS BREAKING OFF!

HERE'S an unretouched photograph of a piece of steel faced with Blackor and then bent as you see it. Note that the Blackor has fractured radially but not tangentically. In other words, the Blackor has not broken or chipped off...even under bending far more severe than would ever be encountered in actual service on a drilling tool.

Blackor does not merely flux over the steel of the tool. It penetrates the steel and the crystals of steel penetrate the Blackor in such a manner that chipping or breaking off are practically impossible and the Blackor cannot crumble away. This exceptional bond ...together with Blackor's next-to-diamond hardness...is why Blackor-ed drilling tools make more hole...in less time...than when faced with any other material.

Send for a 10-lb. order and try it out yourself!

Catalog on request.

BLACKOR COMPANY

Head Office: 13,007 South Main Street
Los Angeles, California

New York Export Office: 39 Cortlandt Street
Tulsa, Oklahoma Office: 410 Thompson Bldg.
Houston, Texas Office: 616 Public National Bank Bldg.

Blackor is granular in form and easy of application. An ounce covers from 4 to 6 square inches, one layer. Applied by the carbon electric arc without previous experience.

Licensed Under Patent Numbers: 1,613,942 1,424,536 359,925 30,021

PROTECTED BY AMERICAN PATENT PROTECTION CORPORATION

16,347 15,311 2,580 1,069 Reissue No. 17,323 Other Patents Pending

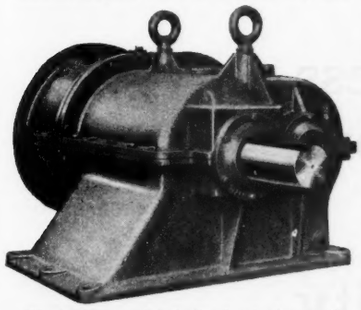
BLACKOR

The Super Abrasion-Resistant Facing

EQUIPMENT AND SUPPLIES

UNITS RECEIVE INITIAL SHOWING IN CALIFORNIA

Two types of oil field power which the Waukesha Motor Co., Waukesha, Wis., is featuring through its new California representative, the Waukesha Industrial Engine Sales & Service Co., and



Waukesha special built herringbone oil field reduction gear.

which it will show for the first time on the Pacific Coast at the Los Angeles oil exposition next week are its WKS power unit and its G 120 horsepower cable-tool rig.

Although designed as a stationary power plant the WKS is readily portable. The engine rates as 120 horsepower at 950 revolutions per minute engine speed. It is direct-connected to a 4:1 herringbone speed reducer of unusual design and great sturdiness and uses either gas or gasoline for fuel. The exhaust manifolds are thoroughly water-jacketed, making them exceptionally safe. Large hand holes are provided to remove scale and sludge which may collect where alkaline water is used. The cooling system of the engine has been augmented to accommodate this extra demand and a large fan and radiator are provided for handling the requirements under severe operating conditions.

A patented Waukesha feature is the "gas-power" mixer for use with natural gas fuel. Run on natural gas, the mixer is sensitive to variations in load and power demand, responds instantly to the governor with a constant proportioning of the gas and air so that maximum fuel economy is obtained under various conditions of load and speed.

A dial gas cock is placed close to the "gas-power" mixer for use in starting while a telegraph throttle control is provided to handle the power demand from the derrick floor. Large air cleaners, electric starting equipment, fully enclosed superoiled governor, full pressure lubrication and Ricardo combustion chambers are features of the engine itself. The structure on which the engine is mounted is unusually deep and rigid, the two steel I beams being connected by cross girders with large gusset plates for reinforcing and stiffness.

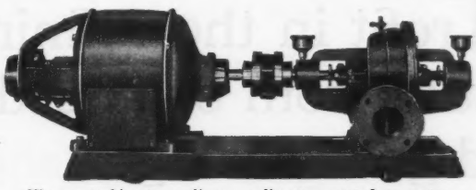
The type G cable-tool rig, representing the six-cylinder line of drilling units, is already well known in Pennsylvania territory. The unique features of this unit are the 120 horsepower six-cylinder engine with combination gas and gasoline carburetors, telegraph throttle control, full pressure lubrication, electric starting equipment and built-in self-oiling governor, all mounted on a sturdy I beam base with sliding gear transmission, belt pulley controls and shooting reel attachment in a moderate size for a moderate weight package.

The gear box is especially designed to give proper pulley speeds and reverse in a simple sturdy mechanical structure. Interlocks prevent the possibility of improper gear operation while the entire control is so arranged that it can be handled from the derrick floor. The engine is rated at 120 horsepower and on some recent locations, these rigs have been drilling 6-inch holes to a depth of 3,900 feet or more on a gasoline consumption of only 80 to 100 gallons per 24-hour day. The gear mechanism and clutch are submerged in oil and fully lubricated at all times; antifriction bearings are used throughout and filtered pressure lubrication wherever possible.

WESTCOS HAVE WIDE RANGE OF USES

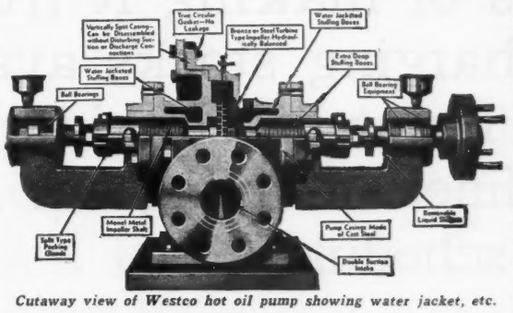
The Westco turbine pump, manufactured by the Westco-Chippewa Pump Co., Davenport, Iowa, is said to have demonstrated its worth in handling reflux overbubble towers, hot oils and other high temperature liquids, emulsion of fuller's or California earth in connection with cleaning of oil, chlorine treating solution, mineral seal oils in recovering gasoline; gasoline, naphtha, etc.; oils where the viscosity does not exceed 600 inches Saybolt universal and brine and water circulation.

The pumps range in capacity from 5 to 250 g.p.m. and are designed to operate efficiently against head pressures from zero to 300 pounds. They are built in single-stage only, it being asserted that the turbine principle provides efficient performance against high heads without the complications of multistage construction. In cases of exceptional pressure Westcos may be operated in pairs, as a two-stage combination.



Westco turbine-type oil pump direct-connected to motor.

The impeller is the only moving part—it being a machined and balanced vane-edged disc which operates in an open channel and without contact with the pump casing. Complete absence of metal contact is stressed by the manufacturer as a feature to prevent wear and insure long pump life. The pump is double-suction type, hydraulically balanced, and side thrust is said to be entirely eliminated. The intake and discharge openings are both on the periphery. The impeller of Monel metal is carried on two outboard ball bearings, each provided with a grease cup. The pump has an unusually wide operating range and the manufacturers say it is not necessary to calculate the pumping head closely when figuring an installation. Rather, it is needful to determine the maximum head only. Then, no matter how much less the head may actually be, the pump will deliver only slightly increased volume, and power requirements will decrease with the head, thus insuring against motor overload.


Vertically Split Casing—Can be Disassembled without Disturbing Suction or Discharge Connections
Cast Circular Gasket—No Leakage
Bronze or Steel Turbine Type Impeller Hydraulically Balanced
Water Jacketed Stuffing Boxes
Extra Deep Stuffing Boxes
Water Jacketed Stuffing Boxes
Ball Bearings
Ball Bearing Equipment
Renewable Liquid Seal Rings
Split Type Suction Elbow
Monel Metal Impeller Shaft
Pump Casing Made of Cast Steel
Double Suction Intake

Cutaway view of Westco hot oil pump showing water jacket, etc.

Another recent development of the company is the Westco hot oil pump, a sectional view of which is shown herewith. While designed primarily for handling hot oils in petroleum refineries, it is stated that this pump is also suited for handling water and other liquids at very high temperatures, or when pressures run up around 400 to 450 pounds. Fundamentally this hot oil pump is the same in design and principle as the regular Westco, with the exception of such changes as are necessary to cope with high temperatures and pressures.

Because of the simplicity of the Westco and its ability to deliver against high pressures with a small-diameter impeller, the amount of metal required is relatively small. This makes it possible, with economy, to make these pumps of cast steel or special alloy metals for the handling of hot oils or corrosive liquids.

Westcos deliver liquid in an even, nonpulsating flow and there is absence of vibration and of interference with delicate recording instruments.

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MADE TRACKSON DISTRIBUTORS

Among new distributors appointed recently to handle Trackson tractor equipment for McCormick-Deering tractors is the J. D. Adams Co., Indianapolis, Ind., who will cover the territory included in the Indianapolis, Fort Wayne, Richmond, Terre Haute and Evansville, Ind., branches of the International Harvester Co. and also that of the Louisville, Ky., branch. McCarthy-Jones & Allen Co., Inc., Nashville, Tenn., have been appointed Trackson distributors for the Nashville territory, and the Option Equipment & Supply Co., Mount Oliver Station, Pittsburgh, Pa., for the Pittsburgh territory. All will handle a complete line of Trackson crawlers, shovels, loaders, bulldozers, cranes, hoists, etc.

BUSINESS NOTES

Aquagel, a conditioning compound said to eliminate many drilling difficulties, will be demonstrated by the California Talc Co. at the Los Angeles oil show next week. A miniature derrick, with Aquagel circulating in the mud ditch, will be shown, and cut-out boards will enumerate various uses of the compound.

The motion picture of the Toledo Pipe Threading Machine Co., Toledo, Ohio, showing "Modern Methods of Handling Piping Jobs," is to be given Friday evening, March 28, in the Central High School, Tulsa. The company will have on display at the same time one of its half-inch to 2-inch portable power pipe machines.

The Bristol Co., Waterbury, Conn., has opened a sales and service office in Los Angeles, Calif., with S. W. Case district manager and W. H. Rogers sales and service engineer. Both have had years of experience in the use of recording, indicating and control instruments.

"Properties of Haynes Stellite," the first of a series of booklets embracing Haynes Stellite products, has been issued by the Haynes Stellite Co., Kokomo, Ind.

Profit in the refining business results from balanced operations and good selling

Yield of gasoline, its quality and costs of making it from various charging stocks available—all must be considered by the refiner in laying out his operating schedules

Each of these factors has a different value in different refineries In some localities coke finds a ready market at a good price—in others Bunker C fuel oil is more in demand

The Dubbs licensee can make a large yield of coke where desir-

able, or specification fuel oil and no coke

The Dubbs Cracking Process can be operated to meet any conditions under which the refiner must work

With a Dubbs plant the refiner can take whatever charging stock is cheapest in his territory and convert it into products that are most readily and profitably salable in his market

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

EQUIPMENT AND SUPPLIES

SPEED AND POWER MARK CRAWLER TRACTOR UNIT

Power, speed and rugged strength are combined in the United crawler tractor to provide a power unit suited to the varied requirements of oil-field work. It is built for hard, continuous usage and according to the manufacturers stands up amazingly under the rigors of bad weather and difficult ground conditions.

Combined with other United equipment such as shovels, bulldozers, cranes, scrapers, hoists, trailers, plows, road machines, etc., the United crawler tractor is said to replace a whole crew of men and from 4 to 12 horses. Outstanding advantages of the unit as enumerated by the manufacturer are: All-steel construction, few working parts, simple steering, ability to turn in its own length, nonmarring, ground-gripping tracks which are the product of the Trackson Co., Milwaukee, Wis.; and ample clearance between the tracks and the motor, a feature which makes it possible actually to build in auxiliary operating equipment, instead of merely attaching or hanging it onto the power unit.

The United crawler tractor's ability to handle bigger loads than would be expected from its size is attributed to the following features: The high ratio motor power is efficiently transmitted to the drawbar through chrome nickel gears and oversized antifriction bearings. Proper design effects perfect balance and puts the bulk of the weight well forward, keeping the front end down and affording greatly increased traction, and the ground-gripping tracks actually gear the power to the ground.

OPENS HOUSTON OFFICE

Continuing its expansion program, the Pittsburgh Equitable Meter Co., Pittsburgh, Pa., announces the opening of a new branch office in Houston, Tex. M. D. Gilbert, a representative of the company, formerly working from its Dallas office, has been placed in charge.

M. D. Gilbert

In order to give customers in the Houston territory the best possible service, warehouse stocks will be carried and so far as possible all orders will be filled in Houston. The address of this new branch is 806 Second National Bank Building.

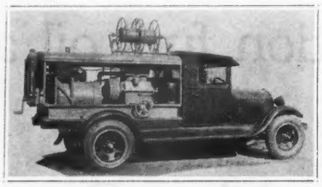
BUSINESS NOTES

The Kewanee Boiler Corp., Kewanee, Ill., which formerly distributed its products in the eastern territory through a New York company, has opened an office of its own in New York, with L. W. Charlet in charge.

The Fort Worth Well Machinery & Supply Co. has been named as the agent in Fort Worth, Tex., for the American Cable Co. in the sale of its rope products.

COMBINATION MADE FOR TANK AND PIPE LINE USE

The latest Schramm engine-driven welder-compressor combination manufactured by Schramm, Inc., West Chester, Pa., and designated as 8-903, is designed



for steel and tank erection contractors and for pipe line work.

The combination consists of a 300-ampere welder and a 120 Schramm compressor mounted on a chassis of a Ford truck. The combination is built in various other sizes and mountings such as steel-wheeled truck, skidded for semi-portable and stationary installation, spring mounted trailer, etc.

The advantage of a combination of this kind is the fact that often the preparation of the surface to be welded requires other mechanical means. Holes must be drilled, surfaces must be cleaned so that the welding process will make a satisfactory bond, which, of course, is best done with the aid of drills, chipping hammers, riveters, wire brushes, emery wheels, sand blasts and all types of compressed air operated tools. Schramm bulletins 2916 and 2925 cover details of this combination.

NEW BOWEN APPLIANCES

A new rotary releasing spear and new rotary sockets have been put on the market by the S. R. Bowen Co. These will be displayed at the Los Angeles show, along with a removable sleeve type cathead, which the manufacturers say can be taken off in approximately 15 minutes and replaced with a new one.

MARKETS MACHINE THAT WELDS PIPE COUPLINGS

The Taylor-Winfield Corp., Warren, Ohio, manufacturer of electrical resistance welding machinery, has placed on the market a machine designed for welding pipe couplings used in oil well lines and casing. With this process it is possible to take a flat piece of iron, roll it up into the form of a ring, place it in the machine and in a few seconds weld it together as if it were one solid forging. According to the Taylor-Winfield company, this machine should enable manufacturers of pipe couplings to cut their costs without lessening the quality of their product.

The machine, according to the company, will weld at the rate of 100 to 175 couplings an hour, being clamped automatically by air cylinders. The flashing and upsetting of the weld can be accomplished by either a hand-operated machine or by a mechanically operated machine where the element of time and the duration of heat, together with upsetting pressure, are governed automatically by the mechanical action of the cam and motor-driven machine.

TRADE LITERATURE RECEIVED

The Walker Manufacturing Co., St. Joseph, Mo., has prepared a 32-page catalog of its oil burners and accessories.

The Fusion Welding Corp., Chicago, has issued a circular listing the complete line of Weldite welding rod. Over 40 different rods have been grouped to facilitate the user in selecting the best rod for his particular application. General information such as standard rod sizes and lengths, packing and other details is included.

The Westinghouse Electric & Manufacturing Co. has published a leaflet describing the application and design of Westinghouse circulating pumps of the centrifugal, double-suction, volute type, designed primarily to supply cooling water to surface condensers.

VULCAN BOLL-WEEVIL LIGHTENS PIPE WORK

The Vulcan Boll-weevil, new oil-field tongs manufactured by J. H. Williams & Co., Buffalo, N. Y., is designed primarily to make flat pipe work and pipe line work easier for the boll-weevil, for which it is named. The Vulcan Boll-weevil eliminates the necessity of holding heavy tongs up against the pipe from below till the chain can be wrapped around and hooked in and there is no loss of time and effort as a result of the tongs having been improperly applied.

In operation the tongs are laid on top of the pipe and the chain is hooked around it. The tongs then are ready for making up or breaking out. For making up the tongs are slid forward so that the rear end of the jaws engages the pipe and the handle is pushed down. For breaking out the tongs are pulled back to engage the forward teeth with the pipe and the handle is pulled up.

The arc of the jaws and the shape of the teeth give a positive bite. The jaws are reversible for double life. The chain locks easily and positively.

NEW ENGINEERING IDEA IN NAYLOR SPIRALWELD

Naylor Spiralweld pipe, manufactured by the Naylor Pipe Co., Chicago, incorporates new engineering features. The Naylor spiral lock seam, electrically welded by the Naylor process results in a continuous spiral truss which provides a mechanically correct structure, giving maximum structural strength with minimum weight. The structure provides a cushion to absorb loads and take care of normal expansion and contraction in each pipe joint.

Naylor pipe structure, reducing the weight of standard pipe 50 per cent is enhanced in life against rust and corrosion by building it of an alloy iron which is highly resistant to these disintegrating forces. Naylor pipe is made of Toncan iron, the product of the Central Alloy Steel Corp. for long life to resist rust and corrosion.

Because it is wound on a turned mandrel, Naylor Spiralweld pipe is uniformly round and true in diameter. It is true to dimensions and a section taken anywhere throughout its length would be perfectly round. This perfect roundness is of high value in the field. It speeds up jointing since the ends match perfectly and coupling or welding is accomplished without preliminary work.

Toncan iron is an alloy of refined iron, copper and molybdenum. It has the natural corrosion and rust resistance of iron further fortified by the properties of copper and molybdenum.

NEW WELDING ROD DEVELOPED

Weldite C-No. 6 Fluxed, a new rod designed for carbon arc welding is announced by the Fusion Welding Corp., Chicago. This rod is particularly adaptable for the welding of mild steel plates and castings. Welding speed has been substantially increased and the deposit is strong and ductile, being more readily machinable than deposits made with the usual filler rod used with the carbon arc process.

OSTER-WILLIAMS REPRESENTATIVES HOLD CONFERENCE

Thirty-eight men, representing the combined sales forces of the Oster Manufacturing Co. and the Williams Tool Corp., recently met in Cleveland for the first sales convention of the new Oster-Williams organization following the recent merger of the two companies.

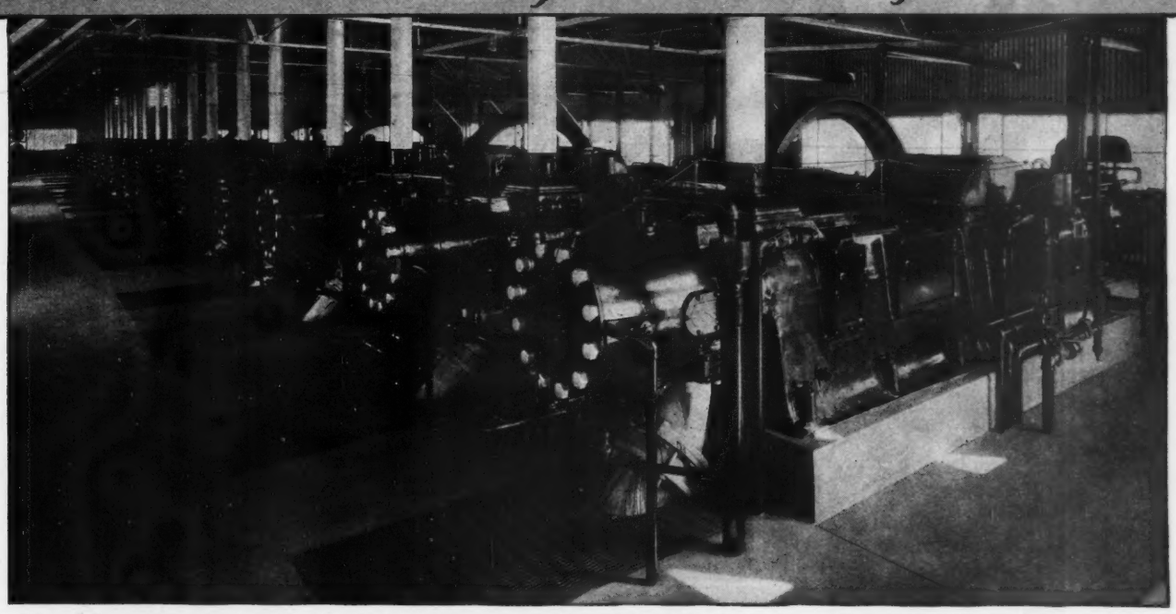
The sales meeting, under the direction of Arthur S. Gould, secretary of the Oster Manufacturing Co. and general sales manager for the newly created organization, covered a period of five days. The first two days were spent in a factory inspection trip of the Williams Tool Corp.'s plant in Erie, Pa. A feature of this trip was the disassembling and reassembling of the complete Williams line including the Willie Williams and the large rapiduction machines for production threading and cutting.

The last three days of the meeting were spent in Cleveland where similar laboratory demonstrations were made of the complete Oster line of hand tools and portable and stationary power machines.

Among those from the field sales force present were Robert Chelstrom, manager of the Boston office; Harold Thompson and Dave Moreinis, New York office; Roy Acord, Buffalo; John Lynn and Harry Van Osten, Chicago; George Lewis, Minneapolis; Pete Willis, Los Angeles; Gayle Jones, Atlanta; Jim Wells, Kansas City; Hiram Gardner, Texas; Ralph Oster and Ed Mosher, Cleveland; Howard Oster, Philadelphia, and Harry Liehr, manager of the oil field division.

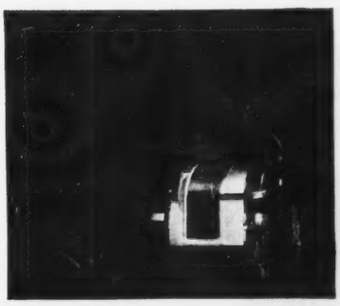
Takes no chances on shut downs!

How the Powers Gasoline Co. insures maximum running time for its engines



Above: Plant of Powers Gasoline Co., St. Louis, Okla., with closeup (below) of Robert Bosch Magneto installation on compressors.

THE POWERS GASOLINE CO., in St. Louis, Oklahoma, is another oil company that takes no chances on ignition troubles. For their compressors are equipped with Robert Bosch Super-Energy Magnetos . . . unfailingly delivering a Super-Energy spark 24 hours out of every 24.



In all the large fields you will find most of the oil companies equip with the Robert Bosch Magneto. For they know that trouble spots have been eliminated in this dustproof and waterproof magneto; that frequent attention and adjustment is unnecessary; that Robert Bosch Super-Energy Magnetos can be quickly and expertly serviced at conveniently located service stations.

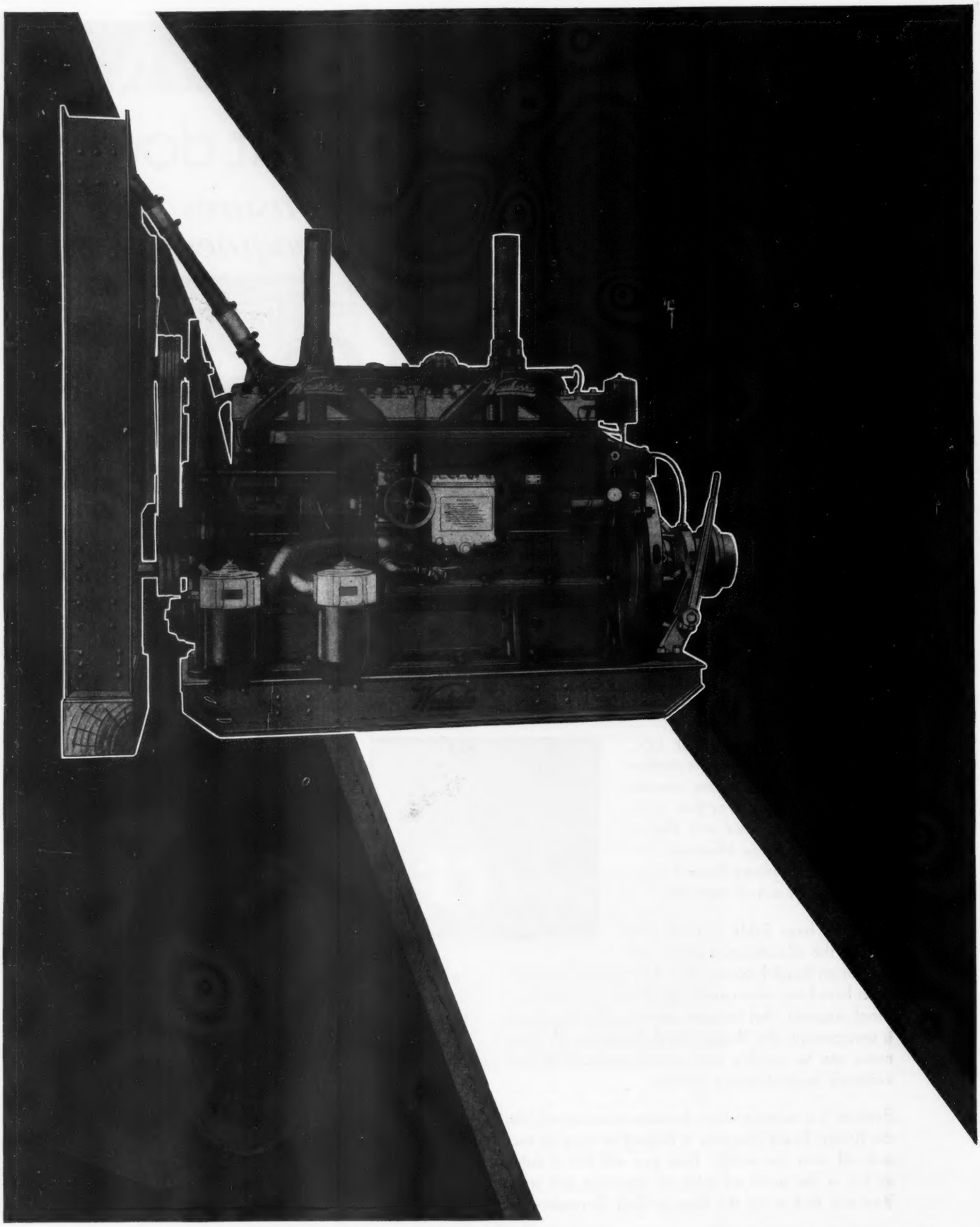
Because it is attention-free, because it is dependable, the Robert Bosch Magneto is helping to hang up records all over the world. Thus you will find it doing its bit in the great oil fields of the south and west. You will find it on the famous Graf Zeppelin—on the world's largest airplane, the Dornier Do-X—on the winning cars at the Indianapolis Speedway—on coast to coast buses—on fleets of heavy trucks.

There is a Robert Bosch Super-Energy Magneto for every type of engine . . . for the simple single cylinder engine . . . for the smaller high speed stationary engine of 15 B. H. P. . . . for the giant gas engine of many B.H.P.—just as there are suitable Super-Energy Magnetos for trucks and tractors, airplane and marine engines of all kinds. Write for a copy of "Ignition Briefly Described," containing ignition information which you will find both interesting and useful.

All Robert Bosch Products bear the full name "ROBERT BOSCH" and this trademark of Robert Bosch A.—G.

ROBERT BOSCH MAGNETO CO., INC.
3601E Queens Boulevard Long Island City, N. Y.

Robert Bosch Super-Energy Magneto



WAUKESHA

Why are multi-cylinder gas engines displacing steam?

THE steam engine cannot compete with the many advantages of the gas engine... and steam is being rapidly displaced. The trend is towards internal combustion engines of the multi-cylinder type... not only in oil field equipment but in shovels, hoists, road pavers, road rollers and small municipal lighting and water plants as well.

In the oil fields particularly, the multi-cylinder gas engine not only uses the available fuels, but utilizes them to the greatest possible advantage. There is no troublesome water problem... licensed or expert operators are not necessary... maintenance costs are decidedly lower. And... when the engine must be moved to a new location... the high costs of new piping, new flues, and new boiler foundations are entirely eliminated.

Waukesha Engines combine with these advantages all the flexibility and simplicity of steam. Actual field demonstrations have repeatedly proved it. Write for Bulletin No. 788. *Oil Industry Equipment Division, Waukesha Motor Company, Waukesha, Wisconsin. Offices: New York, 8 West 40th Street; San Francisco, 7 Front Street.*

In the Oil Fields: C. F. Camp Co., Tulsa; Portable Rig Co., Houston; Bradford Supply Co., Bradford, Pa.; Waukesha Industrial Engine Sales and Service Co., 46 Natoma Street, San Francisco, Calif. and 749 Turner Street, Los Angeles, Calif.

Waukesha Engines will be on exhibit during the California Petroleum Exposition, March 16th to 23rd, inclusive.

317

ENGINES...

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

FUNDAMENTAL PATENTS FOR CRACKING PROCESSES

Would you kindly refer me to some work, if such exists, giving a comprehensive picture of the cracking patent situation? I am particularly interested in securing as complete as possible list of what are considered the fundamental patents applying to each of the following processess: Burton, Cross, Tube and Tank, Holmes-Manley, Jenkins, Black, Dubbs, de Florez and Gyro. Will appreciate any information you may have available.—O. C. B.

All of the processes mentioned have been patented and for most of them a number of patents have been obtained for each process. The fact that these patents have been issued indicates that the patent examiner has decided that fundamental principles have been disclosed. A process which is new and useful or a new apparatus may be patented. That is the idea to be new must not have been in use or known to others before. It must not have been described in a printed publication or patented in any country. A patent is a document, a statement on paper, setting forth the fact that an invention has been made according to one or more claims, and the right is granted to the exclusive use of the invention for a period of 17 years. There is no guarantee on the part of the Government to protect the right from attack; infringement will have to be maintained through legal proceedings in a Federal Court.

Practically all of the well known methods for cracking petroleum distillates are now at some stage of a court hearing to test the validity of the patents which have been issued for their protection. It will probably be some years before all of these suits have been cleared through the courts and possible for the industry to be assured as to what are the fundamental principles of each process.

Some of the patents that are involved in the processes mentioned are listed in the following: William M. Burton, U. S. Patent 1,049,667, January 7, 1913. W. M. Cross, U. S. Patents 1,203,312, October 31, 1916, and 1,326,851, December 30, 1919. Roy Cross, U. S. Patent 1,255,138, February 5, 1918. Tube and Tank, chiefly Caleton Ellis, U. S. Patents, 1,249,278, 1,396,999, and 1,415,232. Holmes-Manley, British Patent 174,089, January 14, 1922; there are other patents, chiefly Hall, Adams, Holmes and others that relate to the process as it is operated. U. S. Jenkins, U. S. Patents 1,226,526, May 15, 1917, and 1,247,883, November 27, 1917. J. C. Black, U. S. Patent 1,426,813, 1922. J. A. Dubbs, U. S. Patents, 1,123,502, January 5, 1915, and 1,135,506, April 13, 1915. L. de Florez, U. S. Patent 1,437,045, November 28, 1922. The Gyro process is reported to be based on original patents to A. S. Ramage, U. S. Patents 1,403,194, and 1,409,404.

OKLAHOMA CITY CRUDE ANALYSIS

Would it be possible for you to publish the analysis of the oil produced from the sand formation in the Oklahoma City Pool? This information would be of value to me.—S. T.

A recent analysis of the oil produced by the Skelly Oil Co. in their No. 1 Hoopes, from the Simpson sand at a depth of approximately 6,400 feet, is reported.

Gravity	38.2 A.P.I.
Sediment	0.2 %
Sulphur	0.24%
Pour	5° F.
Color	Light green
Odor	Sweet

DISTILLATION
(Initial boiling point 74° F.)

		%
Gasoline		30.1
Gravity	58.8	
Initial	104	
Endpoint	420	
Kerosene		15.0
Gravity	41.3	
Flash	178	
Fire	198	
Gas oil		35.0
Gravity	33.0	
Flash	115	
Fire	225	
Pour	65	
Fuel oil		19.0
Gravity	18.3	
Pour	45	

No odor of hydrogen sulphide was detected during distillation. The gasoline, as separated, had a neutral reaction and was only slightly sour to the doctor test.

OPERATION OF A PRESSURE STILL

Will you kindly explain the practical workings of a pressure still with particular reference to charging stock, still temperatures, pressure carried, duration of pressure period and how pressure controlled, use of steam in stills, through what equipment vapors pass on way to condenser and where pressure is relieved? What is the approximate percentage of increase in extraction obtained through pressure over straight distillation?—J. P. J.

Cracking has become so important in the production of gasoline, about 33 per cent of the total gasoline is made by some kind of cracking process, and the methods of operating the dozen or more well-known pressure stills are too complicated and would require too much space to permit a detailed account of the operation, that no more than a very brief description is possible.

The first commercial cracking process was that of W. M. Burton, operated with shell stills and keeping the oil and vapors under pressure until released after passing the condenser. This was based on U. S. Patent 1,049,667; the claims of this patent indicate that the charging stock has a boiling point upwards of 500° F., and this is distilled at a temperature from approximately 650° to 850° F. under a pressure of about 4 to 5 atmospheres; this pressure being maintained on the vapors throughout their course and while undergoing condensation. The first stills of this type had a capacity of from 200 to 250 bbls. with walls one-half inch thick. There was an air-cooled condenser from which the heavy liquid ran back to the still. The running time was about 48 hours and the yield of pressure distillate, approximate gravity 50 A.P.I., was close to 50 per cent of the charge.

This is a very brief outline of one process and at the present time there are several cracking processes of commercial importance. Brief descriptions of the more important ones may be found in American Petroleum Industry, Bacon and Hamor; Motor Fuels, Leslie; Handbook of the Petroleum Industry, Day; American Petroleum Refining, Bell.

The yields of gasoline by cracking may vary between 30 and 100 per cent of the charge, the higher yield being claimed for the process by hydrogenation. Cracked gasoline contributes about 33 per cent of the total gasoline sold in the United States, straightrun 55 per cent, and natural gasoline 12 per cent. Probably an increase of 50 per cent over straightrun operation would be a representative yield for the average better type modern cracking unit.

DECOMPOSITION OF LARD OIL

Upon learning that the cooling jackets on gas engines leak and the water upon entering the cylinder forms steam, I recommended the addition of 3 to 4 per cent lard oil to the lubricating oil to emulsify the moisture and so eliminating the danger of steam formation. After using this lard oil mixture the entire engine room was filled with a pungent, obnoxious odor, driving the employes out of the room. A test on the oil shows proper flash and fire and only the well-known sweet lard oil odor upon burning and also upon evaporation. What is your opinion?—F. C. O.

Lard oil may contain impure glycerol and an excess of fatty acids that under proper conditions may give rise to the formation of very objectionable products. It appears that in this particular instance a large quantity of acrolein was produced. Acrolein is an aldehyde formed during the partial combustion of fatty material and when impure glycerol is distilled. This substance is produced when a fat is scorched and is to a large extent responsible for the objectionable odor of burning meat and fat. It is exceedingly irritating to the eyes, causing tears to flow freely; when brought in contact with the skin produces a sore that closely resembles something similar to a combination of a minor burn and an infection of poison ivy.

While the description given in the question appears to indicate that acrolein was produced, the ordinary tests for aldehydes would have to be made by a chemist to confirm this opinion.

HYDROGEN SULPHIDE EVOLVED WHEN TREATING

In the treating of pressure distillate is there a reaction between hydrogen sulphide and the sulphuric acid that is added as the first step in treating in the most generally used process?—J. R. C.

While there may be a misunderstanding of the question it appears that a statement of the principles of the action of sulphuric acid on petroleum distillates is desired. If hydrogen sulphide is in solution in the distillate, the addition of a small quantity of sulphuric acid would tend to liberate it from the solution. Hydrogen sulphide would be evolved if there were any sulphides present, upon the addition of a small quantity of relatively weak acid. However, prolonged action of sulphuric acid will cause oxidation of hydrogen sulphide.

All reactions that take place between a petroleum distillate and sulphuric acid, as under treating conditions, are not known. Some of the principle ones are included in the following: A number of the hydrocarbon acids, gums, tars and some sulphur compounds are concentrated in the precipitate; some sulphur compounds are not removed but are changed in form and are soluble in the product; aromatic, unsaturated and nitrogen compounds combine with a part of the acid; unstable hydrocarbons and the weaker acids of sulphur are oxidized; there is a tendency of unsaturated bodies to be converted to polymers.

You will find a discussion of the nature of acid refining in "Petroleum and Its Products," by Gruse. The following quotation is from page 125:

"The nature of the sulphur compounds not included in the asphaltic constituents is not known with such exactness as will permit an exact prediction of their action with sulphuric acid. In general, hydrogen sulphide and mercaptans would be oxidized, and alkyl sulphides and disulphides, as well as sulphoxides and sulphones dissolved unchanged by the acid to the extent of their respective solubilities in oil and acid."

When treating distillates known to contain hydrogen sulphide, it is desirable to remove it by washing with water and a weak solution of caustic soda before treating with acid. Hydrogen sulphide dissolves in water to an appreciable extent and is also easily converted to the sulphides by the action of caustic soda.

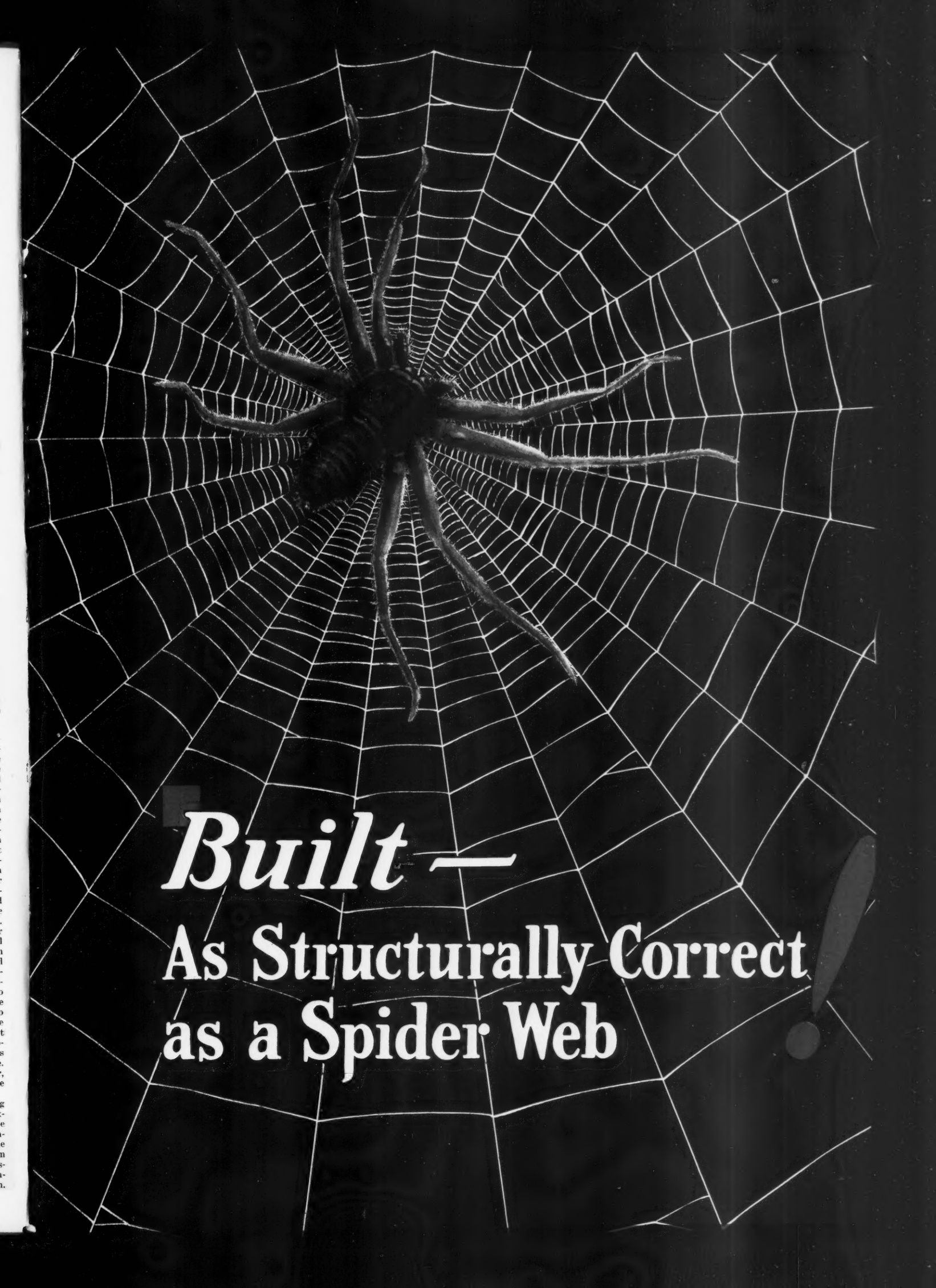
WHAT CAUSES COLOR OF GASOLINE

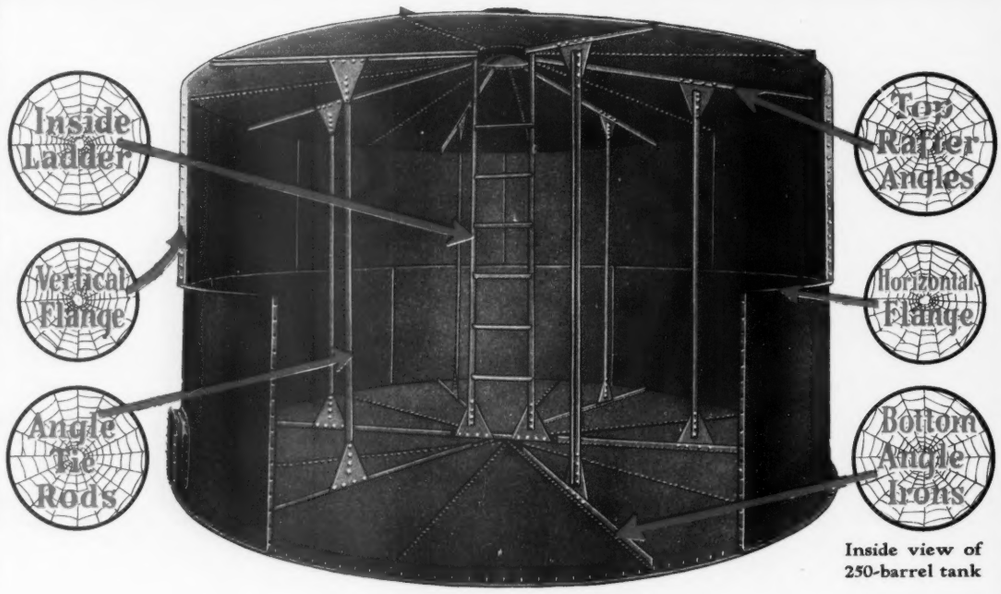
The pressure distillate from cracking Smackover crude was treated with sulphuric acid and the gasoline from this sweetened with doctor solution and sulphur. The gasoline was 27 color before and zero when finished; sweet and corrosion good. When a sample of the off-colored gasoline was placed in the sun it was changed back to 27 color in from three to five minutes. What gives it the yellow color and what is the reaction which produces the color change in the sun?—W. M. C.

Just what causes the color of petroleum products is not known. Some distillates of the gasoline and kerosene range have been reported to have quite unusual colors, such as pink, blue and green, that appear to have had only ordinary treatment and have not been modified by the addition of foreign chemicals. These color properties are looked upon by some authorities as being caused by the presence of certain groups that are related to dyestuffs. It seems that possibly some sulphur or nitrogen compounds must have a part in the formation of the common colors or tints in many petroleum distillates. Frequently these colors may be discharged by the addition of hydrogen or by the addition of very small quantities of acids.

Occasionally a sample of gasoline or kerosene will be finished carrying small traces of either water or litharge in suspension and when these are examined a low color or "off color" will be reported. However, removal of the suspended matter will enable the chemist to make a satisfactory determination in the instrument. The common practice is to filter such distillates before making the color test. Another suggestion is that there may have been enough acid produced under the influence of the rays of the sun to act as a color discharge. It may be though that suspended water, because of the very rapid change, is the explanation.

Without complete details concerning every step in the operation and the exact conditions under which the sample was exposed to the sunlight, it is impossible to say what may have been the cause of this very sudden change in color, but it is trusted that the suggestions which have been indicated may enable you to arrive at some conclusion.


Built —
As Structurally Correct
as a Spider Web



Inside view of 250-barrel tank

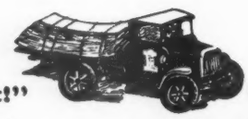
Built on all Principles of STRENGTH

The B. S. & B. PERFECTION Vapor Pressure Tank has to be strong at every point to withstand the stringent load that is imposed upon it. They must be strong to have served so many so satisfactorily, and for so long.

Just as a spider's web is built on the same principles that a bridge is constructed, so are these tanks also structurally correct. Note the various points of strength: The staves that circle the tank horizontally acting like hoops; those that are vertical and so arranged alternately with others, likewise vertical; the flanges themselves; the angle iron tie rods, and the ladder itself which serves a similar purpose; the top rafter and bottom angle irons; the heavy gussets bolted to the angles; the pie-shaped segmental bottom and deck. Even the bolts themselves stand over 100,000 pounds tensile strength per square inch! Everything is made with strength in mind.

B.S.&B. Perfection Vapor Pressure TANKS

With the aid of these tanks you can keep your oil in storage without appreciable evaporation loss, and at well-head gravity. They are more than gas tight—vapor pressure tight equipped with the B. S. & B. Thief Hole Pressure Vacuum Valve, which operates at 16 ounces pressure, or 2 ounces vacuum. This safety valve protects the tank, just as the tank protects your crude.



"Service on the Dot!"

From our branch to your lease in a few hours time. We are able to give service on delivery and installation of these tanks RIGHT THEN!

"Service on the Spot!"

With fifty Field Stations and stocks in each of them; with our own tank crews, we are able to give service in the field RIGHT THERE!

Let us demonstrate the principles of strength on which these tanks are built, and further elaborate on their merits. May we send a plan or a man? Write Dept. X-3.

BRANCHES

ARKANSAS
El Dorado

OKLAHOMA
Asher
Bartlesville
Blackwell
Bristow
Drumright
Duncan
Earlsboro
Garber
Hominy
Okla. City
Okmulgee
Sasakwa
Seminole
Shidler
Tulsa

KANSAS
Augusta
El Dorado
Eureka
Hillsboro
Hutchinson
Madison
Russell
Valley Center
Wichita
Winfield

TEXAS
Amarillo
Big Springs
Borger
Breckenridge
Cross Plains
Dayton
Electra
Fort Worth
McCamey
Midland
Pampa
Pyote
Ranger
Wink

WYOMING
Casper
Cody

MISSOURI
Kansas City

NEW MEXICO
Artesia
New Hobbs

MONTANA
Conrad
Kevin

FOREIGN
Canada
Okotoks, Alberta
So. America
Maracaibo, Venezuela

EFFICIENT B.S.&B. SERVICE DEPENDABLE

Black Sivalls & Bryson INC.
BARTLESVILLE - OKLAHOMA

Our Watchword QUICK SERVICE

Natural Gas Developments

WESTERN NATURAL GAS CONVENTION PROGRAM

NEW ORLEANS, La., Mar. 10.—Fifteen hundred representatives of the industry are expected here May 5, 6, 7 and 8 to attend the 1930 Natural Gas Convention, which will be held under the auspices of the American Gas Association. Headquarters will be at the Roosevelt Hotel.

H. C. Morris of Dallas, Tex., chairman of the Natural Gas Department, said that while this convention will be known as "The Western Natural Gas Convention," it will be open to all natural gas men in the country. He added that the program will feature outstanding problems and points of interest to the industry.

B. J. Mullaney, president of the American Gas Association, and Alexander Forward, managing director of the association, are among those expected to deliver addresses.

Others who have been invited to speak include J. B. Tonkin, vice president and general manager, The Peoples Natural Gas Co., Pittsburgh, Pa.; W. S. Yard, vice president in charge of gas construction and operation, Pacific Gas & Electric Co., San Francisco, Calif.; L. B. Denning, president, Lone Star Gas Co., Dallas, Tex.; H. C. Cooper, chief engineer, Hope Natural Gas Co., Pittsburgh, Pa.; T. R. Weymouth, president, Oklahoma Natural Gas Corp., Tulsa; H. D. Hancock, consulting engineer, Henry L. Doherty & Co., New York; J. D. Creveling, manager, natural gas division, Henry L. Doherty & Co., New York; N. C. McGowen, vice president and general manager, Louisiana Gas Co., Shreveport, La.; E. L. Rawlins, United States Bureau of Mines, Bartlesville, Okla.; H. J. Hoover, natural gas consultant, Cincinnati, Ohio; R. W. Gallagher, president, East Ohio Gas Co., Cleveland, Ohio; J. B. Garner, director, Hope Natural Gas Co., Pittsburgh, Pa.; W. M. Little, Cities Service Gas Co., Bartlesville, Okla.

TO BUY HELIUM LAND IN CLIFFSIDE AREA

WASHINGTON, D. C., Mar. 8.—Completion of the Government's program of acquiring all helium bearing land in the Cliffside structure in Potter County, Texas, 10 miles northwest of Amarillo, was provided in a bill introduced by Representative Englebright of California. The bill authorized an appropriation of $90,000 for completion by June 30, 1933, of the Amarillo helium plant operated by the Bureau of Mines.

The total acreage of gas-bearing land, which the Government contemplates acquiring at the Cliffside structure, is about 46.000 acres, which, according to Scott Turner, director of the Bureau of Mines, contains a sufficient amount of helium to supply the Army and Navy for many years. Twenty million feet a year could be extracted from the land, although the annual needs of the Army and Navy have been less than 12,000 feet.

The Cliffside structure is closed and practically virgin and it is the Government's intention to keep it closed as a conservation measure. The Government now holds gas leasehold rights to 25,894 acres there, which with the additional 11,833 acres provided for in the first deficiency bill makes a total of 37,727 acres.

To date the Government has spent or is obligated to the amount of $1,520,000 in acquiring the Cliffside structure and this amount has been appropriated. The regular estimate made in the Department of Commerce regular appropriation bill this year for further acquirement of land at the Cliffside structure was $306,190. The program presented to the Appropriations Committee three years ago estimated a total of $2,500,000 would be needed to complete acquisition of all gas-bearing land in the Cliffside structure.

BINGHAMTON TO USE ALLEGANY FIELD GAS

WELLSVILLE, N. Y., Mar. 10.—Binghamton is now getting gas from the Allegany oil field.

With reconstruction of the old pumping station just east of Wellsville off the Wellsville-Andover road practically complete, huge compressor pumps are already in full operation pumping gas through four 6-inch lines to Binghamton.

The station and the lines are operated by the Columbia Gas & Electric Co., with offices in Pittsburgh. Pipe lines of the Columbia company run from the Allegany Field east to the Atlantic Coast and south as far as Virginia.

The line was formerly owned for years by the New York Transit Co., a subsidiary of the Standard Oil Co. of New Jersey. Oil from the Allegany Field was pumped through the lines to the Standard refinery near Bayonne, N. J. Pump stations were located at intervals, those in this section being located at Wellsville, Cameron and Horseheads.

Two massive pumps were set in operation several days ago. At present the amount of gas being pumped from the field is fluctuating and foremen in charge are unable to say the exact amount being carried. Binghamton will take the entire output it is understood.

MUSKEGON AGAIN FEARS EXHAUSTION OF GAS

MUSKEGON, Mich., Mar. 8.—Too heavy production of new lower Traverse formation gas wells has pulled in salt water so that pipe line operators in the Muskegon oil field again are forced to look to deep tests as their hope for continued operations. Practically all of the wells drilled into lower Traverse gas sands during the past three months to save the field from complete exhaustion of natural gas are now showing either oil or water. Gas pipe line operators attribute the present situation to the fact that wells have been produced at too near their open flow capacity rather than the lawful one-third open flow.

It is estimated that not more than 2,000,000 feet of an average daily send-out of 7,000,000 feet through four gas pipe lines is obtained from other than the new lower Traverse wells. This means that the lower Traverse is being subjected to a pull of about 5,000,000 feet a day.

Rock pressure of all of the lower Traverse gas wells seems to be showing the effects of too heavy production indicating that they may not be depended upon for natural gas for Greater Muskegon uses for as long as had been predicted.

J. L. Robinson, field superintendent of the West Michigan Co., who predicted some time ago that there might be enough gas in the lower Traverse formation for all uses in Greater Muskegon for another year, now sees the early exhaustion of the formation and the need for deeper gas sands. Although several companies have announced deep tests, no great amount of drilling has been done beneath the Dundee by any company.

GAS COMPANY DIVIDEND

CHATHAM, Ontario, Mar. 10.—Northwestern Utilities, Ltd., of Edmonton, Alberta, has declared a fifteenth quarterly dividend payable March 1 to shareholders of record February 25, on the 6 per cent cumulative prior preference shares.

DIVERT CARBON FROM LOUISIANA TO TEXAS

NEW YORK, Mar. 10.—United Carbon Co. has diverted a large part of its carbon black manufacturing operations from Louisiana to Texas during the past year, says the company in a statement issued in connection with the listing of its stock on the New York Stock Exchange.

Output of carbon black by the company in 1929 was 94,213,894 pounds, a gain of approximately 50 per cent over the 60,525,530 pounds made during the previous year. Production by the company in 1927 was 33,684,525 pounds. Of the 1929 output total, 60,524,301 pounds were produced at United plants in Texas.

The shift from Louisiana to Texas, according to Oscar Nelson, president of the company, was in line with the company's policy to move carbon plants from localities where a good market exists for natural gas to locations where large quantities of gas are available at low prices. Where other markets for natural gas exist, use of this product for the manufacture of carbon black is uneconomical.

United Carbon Co. produced in 1929 a total of 21,953,256,000 feet of natural gas, a slight decline from the 22,151,552,000 feet produced in 1928. The company's purchases increased from 38,178,448,000 feet in 1928 to 65,954,321,000 feet in 1929.

Kentucky carbon black production of Taylor-Green Gas Co., a subsidiary of United Carbon, was suspended entirely in 1929. The Kentucky subsidiary produced only 500,000 pounds in 1928. The company also curtailed output in Utah, where only 972,625 pounds of carbon black were produced last year, against 1,368,575 pounds turned out in 1928.

GAS UTILITY SALES INCREASE 11 PER CENT

The steady and persistent expansion in gas utility sales recorded during most of 1929 continued in December, which witnessed a gain of 11 per cent. For the 12 months ending with December these companies reported gas sales of over 446,000,000,000 feet, an increase of nearly 10 per cent. Revenues from gas sales aggregated $418,831,103 for the year, a gain of 4.1 per cent. The customers of these companies totaled 9,738,670, or approximately 2 per cent more.

For the year as a whole, most sections of the country continued to report satisfactory progress. In New England the year closed with a gain of nearly 6 per cent in gas sales, compared with an increase of only 1.4 per cent in customers. A factor contributing materially was an increase of 5.8 per cent in gas sales for house-heating purposes. The growing importance of this newer use for the gas industry's product is evident from the data relating to New England, indicating that while househeating customers were only one-half of 1 per cent of the total customers, gas used for househeating purposes represented nearly 7 per cent of the total gas sales for the year in this region.

The 12 months ending with December witnessed a continuation of these trends in production which have characterized the industry at large to an increasing extent during the past few years. The volume of water gas produced by these companies during 1929 was about 8 per cent less, while the production of retort coal gas dropped nearly 15 per cent. Marked increases, however, were registered in the quantity of coke oven gas produced and purchased. The volume of this type of gas produced by the utilities themselves rose some 27 per cent during the year, while coke oven gas purchased from sources outside the industry, such as iron and steel plants, as well as merchant by-product coke oven plants producing gas primarily for city distribution, increased some 29 per cent.

An especially significant feature has been the marked increase in purchases of natural gas, either to supplement existing supplies of manufactured gas or representing purchases for distribution by companies which have changed over to natural gas. This trend was particularly marked in the South Central and Mountain states, as well as on the Pacific Coast, where the completion of new long distance pipe lines rendered available greatly augmented supplies of the natural fuel.

PERMITS FOR "DRY ICE" WILL BE RECOGNIZED

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Mar. 10.—The holders of permits to prospect for oil and gas on certain public lands of Colorado and Utah will receive the protection of the Department of the Interior by the recognition of the legality of their permits covering discovery of what is known as "dry ice," which is obtained from carbon dioxide wells. This "dry ice," it is stated, has a refrigerating efficiency twice that of water ice and, while now in the experimental stage, may become a commercial product of the desert stretches of the West.

This action was taken in the form of a ruling by Dr. Ray Lyman Wilbur, Secretary of the Interior, who has agreed that since the commercial use of carbon dioxide from such wells was still in the experimental stage the department would accept a nominal price of 2 cents for 1,000 feet of gas during the first two years of actual operation, the price then to be subject to the adjustment on its market valuation.

During the past few years the possibility of using carbon dioxide as a refrigerating agency has been developing. It has been found that a pressure of some 1,100 pounds to the square inch will convert this gas into a liquid. This liquid, if released in a spray, will form snow. The snow may be compressed and used somewhat as is ice.

As it changes from its solid form, however, it directly passes to the gaseous form. There is no liquid left as in the case of water ice. In thus changing into the gaseous form, it absorbs heat from surrounding spaces. It takes up nearly twice as much heat, pound for pound, as does water ice. It transforms more slowly than does water ice, and is therefore superior to it for long shipments.

It produces lower temperatures, and is therefore more satisfactory for shipments such as fish, fresh meats and ice cream, which are best preserved when frozen; but it is less satisfactory for fruits which are injured by freezing. The absence of a liquid after melting adds to the convenience of the use of this agent.

Commercial "dry ice" is usually produced by burning coke and capturing and compressing the carbon dioxide which results. The problem in using natural carbon dioxide produced from wells rests on the ability to convert it to dry ice form and transport it to market.

SOUTHEASTERN ARKANSAS GAS

Lake Cillare, McGhee, DeMott, Eudora and Wilmott in southeast Arkansas are now receiving gas from the north Louisiana gas field and the service will within 60 days be extended to other villages and towns of that region. The gas is being served by the Arkansas Power & Light Co. through an 18-inch pipe line completed some time ago.

Barrett Anti-Corrosion EVERY

A river crossing in the Southern Natural Gas system—protected with Barrett's pipe line specifications. Ford, Bacon and Davis, Inc., engineers; Hope Engineering Company, contractors.

At left is shown Barrett Pipe Enamel being applied by the "sling" method. Picture taken during construction of a city main in the city of Atlanta, for the Atlanta Gas Light Company, Atlanta, Ga.

BARRETT ANTI-CORROSION SPECIFICATIONS

BARRETT Anti-Corrosion Specifications are made to meet all the many different conditions of pipe line construction. They include felt re-enforced enamels for extreme conditions—rivers, swamps, etc., enamels to be applied hot in less corrosive sections; cold applications for still less corrosive regions.

Specifications *for pipe line protection problem..*

THE corrosive conditions which affect pipe lines have been carefully studied by The Barrett Company's engineers and other experts in developing and perfecting Barrett Anti-Corrosion Specifications.

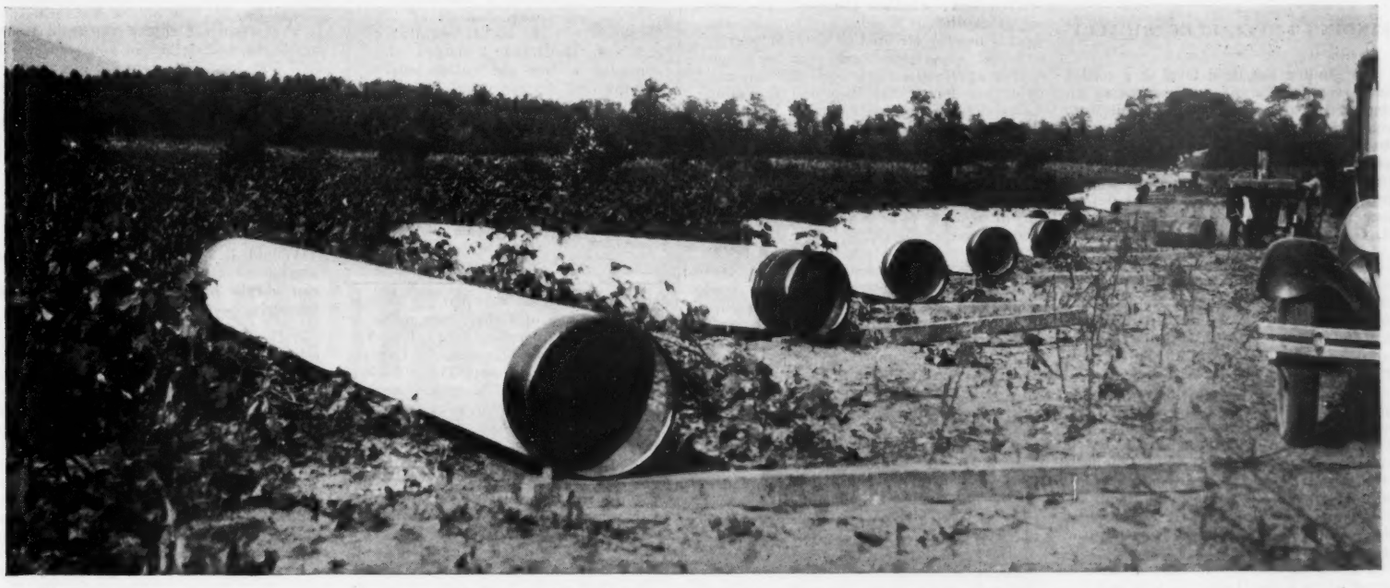
Chemical and physical characteristics of soils as determined by geologic and topographical or climatic conditions; depth of burial, drainage of trench; electrolysis — all these, and more, are taken into consideration. And the correct formula and methods of application are carefully worked out to combat each possible corrosive condition that may be met with in the field.

This is a part of the *Barrett Service and Inspection* that goes along with every pipe protection job. It is the outgrowth of *76 years' experience* in solving all manner of waterproofing and weather-proofing problems connected with nearly every kind of material. This is why Barrett Anti-Corrosion Specifications offer a service in this field just as Barrett Specification Roofs, Tarvia Roads, and Barrett Underground Waterproofings for tunnels, dams, subways, etc., have long done in theirs.

The waterproofing agents used with Barrett Anti-Corrosion Specifications are made from the finest coal-tar pitch. This well-known waterproofing material is prepared and applied under the most exacting Barrett Anti-Corrosion Specifications. Non-porous, non-absorbent, chemically inert, these coatings give positive protection against virtually every corrosive element or combination of elements. They adhere in a strong, unbroken film, assuring added years of uninterrupted service.

The Barrett Company is organized to give pipe line builders the closest and fullest co-operation from beginning to end of the pipe laying job.

For information on pipe line protection you are invited to to phone, wire or write: The Barrett Company, New York



Section of Southern Natural Gas Company System in Alabama. Ford, Bacon & Davis, Inc., Engineers, Hope Engineering Company, Contractors.

The Barrett Company

40 Rector St., New York

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

FINDING LEVEL ELECTRICALLY

For finding the fluid level of a well I have seen a reference somewhere to an electrical device which was not intricate and I think it was homemade. With this device a line was run into the well and when the end of the line struck the water it rang a bell at the surface. Can you tell me something about this device, how it is made and how it operates?—E. G. R.

In their technical paper No. 460, "Design and Operation of Gas Well Siphons," I. B. Williams, R. R. Brandenthaler and Morgan Walker of the United States Bureau of Mines, describe a method of determining the fluid level in a well by a simple electrical device.

One system involves the use of a single insulated wire long enough to reach the top of the fluid from the top of the well. This wire is lowered into the well and when the bare end strikes the water the electric circuit created by the use of a small storage battery of about 12-volt capacity is closed and the current flows back to the surface through the casing.

The upper end of the electric wire is attached to a small electric bell and the circuit from the top of the casing to this bell is completed by use of another piece of wire. The storage battery is included in this system, or if a supply of current is available from some lighting system at the well it can be used as a source of energy.

A second system makes use of a two-wire insulated line long enough to reach the surface of the fluid in the well. The ordinary "shooting" line employed in setting of a torpedo in the well is quite satisfactory for this purpose. To the end of this pair of wires an electrode is attached and to prevent contact with the casing or tubing this electrode is inclosed in a short length of pipe that is open at both ends. The pipe is about 1 inch longer than the electrode and when it is submerged in the water in the well the circuit is closed and the bell at the surface rings. A storage battery or current from a lighting system is used as a source of energy for this system also.

Measurements are made with a steel tape after withdrawing the conductor from the well, or the conductor may be measured under tension as it enters the well.

MORE ABOUT PULLEY SIZES

The following interesting communication has been received from John W. Schaffner, chief engineer of the Imperial Belting Co., Chicago:

"We noticed in the January 9, 1930, issue of The Oil and Gas Journal, under 'Field Problems and Their Solution,' an article entitled 'Large Pulleys or Small?' This article consisted of a question sent in by S. G. N. and an answer. S. G. N. raised the question: Does the size of pulleys of a power unit make any difference of importance, aside from the fact that the big pulleys take up more room?

"The answer given stated in effect that it is a better plan to use small pulleys and run belt faster, rather than over large pulleys at slow speed because the belt sticks to pulleys better and is less likely to slip when run at high speed.

"As a matter of fact, every power transmission drive should be designed and proportioned in keeping with the power to be transmitted and with physical operating conditions to be met in each case.

"Proper pulley diameters are determined only upon due consideration of the size and weight or thickness of the required belt; whether the loads are suddenly applied or steady, and whether the belt is heavily stressed or not. If heavily stressed, experience teaches us the larger pulley applications are more efficient and result in longer belt life and minimum maintenance expense. Power belts are usually heavily stressed.

"There is, in other words, a minimum diameter pulley for each application of a given belt under a given set of conditions. I believe all belt manufacturers, in answering S. G. N.'s question would recommend small pulleys be avoided.

"As to slippage, all belts should be applied with the necessary initial tension for the respective applications. If conditions are such as to produce slippage, the faster the belt speed, the sooner will the belt suffer the destructive effects of slippage such as the heating of, the wearing away, and the tearing of the pulley face of the belt, all of which go to hasten the day of the removal of the belt.

"The smaller the arc of contact of the belt over the pulleys, the smaller the area of contact between these surfaces. There naturally follows a greater tendency to wear away the pulley face of the belt. Then too, the greater the speed of the belt, the greater will be the centrifugal force, which force tends to throw the belt away from the pulley centers and in so doing, tends to reduce the arc of contact of the belt over the pulley faces. To which must be added the resultant increased unit belt stress, which increased stress in the belt does not produce any effective work.

"These facts, coupled with the effects of the sharper bending of the belt over small pulleys, combine to set up greater internal stresses in the belt and they cannot help but reduce or shorten belt life as compared to larger pulley and the slower belt speed applications; therefore, we do not believe the answer given in the publication noted above, is correct, in fact believe it is very misleading. We have, therefore, taken the liberty of writing you some of our thoughts in answer to the given question."

ADMIXTURES FOR ROTARY MUD

We are making an investigation relating to the use of heavy minerals, such as iron oxide and barytes in rotary mud.

1. What is the earliest date of which you are aware of the use of iron oxide in rotary muds for the purpose of increasing the weight of the mud column?

2. What is the earliest date of which you are aware of the use of barytes in rotary muds for the same purpose?

3. Where did the uses referred to in questions 1 and 2 occur?

4. Under whose supervision was the drilling carried on and where may they be reached?

5. Are there any records of such use, and if so where may they be obtained?

6. Do you know of any published articles telling of such uses and where may they be found?—U. O. C.

By way of preliminary it might be well to mention here, as in the answer to a recent question by M. L., that a patent of broad application covering the use of various substances for increasing the weight of rotary mud has been granted the National Pigments & Chemical Co.

Investigation thus far made by this department has failed to reveal the date of the earliest use of either iron oxide or barytes (barite or barium sulphate). The first rotary drilling was done by Captain J. F. Lucas at Spindletop, Tex., in 1901. The first articles on this subject, according to available records, were published in 1914. So the first use of these weight-increasing substances must have occurred evidently between 1901 and 1914. One of the articles was prepared by the United States Bureau of Mines in 1914. As the Bureau's methods of procedure at that time was such that much time elapsed between the date of field work and the date of publication of the results of this field work, it is safe to assume that mud-laden fluids were in use two or three years prior to 1914.

If your question four refers to the person or company purchasing these rotary mud admixtures, it can be said in reply that so far as information at hand goes, this kind of material is bought by the drilling contractor. No record is at hand indicating who supervised the drilling of the first wells using these admixtures.

A request addressed to the Technical Department of the Tulsa Public Library, Tulsa, will bring you a bibliography on the use of mud-laden fluids in drilling which should be of value to you. In the issue of The Oil and Gas Journal for January 30, 1930, there is an article on drilling practice in the Oklahoma City Field which may be of help.

WHY WAS IT CALLED THAT?

CHERRY-PICKER

This designation is applied to a fishing tool which is a modified form of the horn socket. The lower end, or mouth, is cut away on one side so that it resembles a scoop. Sometimes, instead of the scoop effect, the socket contains a narrow, elongated V-shaped slot running almost the entire length of the tool. By reason of its peculiar shape the device as it turns works around and back of a fish that has become partly embedded in the wall of the hole and engages it when the regular horn socket would fail. This faculty of "reaching out" and grasping a lost tool led to the name "cherry-picker."

HUNTING GAS LIFT FORMULAS

I have been trying to find a set of formulas to be used on air and gas lift problems and have been unable to do so. The problem that I have is to find the size of tubing necessary to flow 1,600 bbls. of water and oil from a well about 4,000 feet deep with a submergence of 2,400 feet, using a starting velocity at the bottom of the string of tubing of 9 feet per second. I think this could be calculated by a simple formula that would take into consideration the specific gravity of the flowing medium. In this case I intend to use 300 pounds pressure in flowing the well after it has been kicked off. Discharge pressure to be atmosphere.—O. K. M.

This department is unable to give you any formula that can be applied to this problem and quotes the following from Robert Stirling's "The Gas Air-Lift Pocket Book": "Owing to the loss of slippage being impossible to calculate by any known formula, the capacity of the flow tube can only be estimated from the results of experiments already carried out under various conditions. From these, reasonably accurate estimates of capacity can be made within certain limits. By tabulating the results of further experiments these limits will be gradually extended, and more exact estimates will doubtless be evolved."

Mr. Stirling states that with a 50 per cent ratio of dip to lift a 2-inch tube will have a capacity of 1,500 bbls. of fluid between 32° and 22° B. gravity per day of 24 hours. This 50 per cent ratio you can obtain in your well by submerging the flow tube below the surface of the fluid in the hole a distance equal to that from the top of the fluid to the top of the well, which in your case would be 1,500 feet.

The rest of the problem is too involved to be gone into in detail here. You probably would find information of value to you in Mr. Stirling's volume, obtainable from Spon & Chamberlain, 120 Liberty Street, New York, for $2.

BOOKS ON TOOL DRESSING

Would it be possible to get the addresses of different publishers where I can obtain books on tool dressing and tempering?—F. N.

The only book of which this department has knowledge giving instructions regarding tool dressing and tempering of steel is Jeffery's "Deep Well Drilling," published by Walter H. Jeffery, 1612 Second National Bank Building, Toledo, Ohio, which sells for $5. There is a chapter in this book on the subject but it is general. It is suggested that you get such literature as you can from the manufacturers of steel used in the petroleum industry. Some of these companies are the Allegheny Steel Co., Brackenridge, Pa.; Andrews Steel Co., Newport, Ky.; Central Alloy Steel Co., Massillon, Ohio; Republic Iron & Steel Co., Youngstown, Ohio; and International Nickel Co., 67 Wall Street, New York.

It is common practice to use special alloy steel for special purposes. Each type of steel needs special treatment and the best source of information regarding it is the manufacturer of the product under consideration.

Mr. Jeffery's book gives good general advice, not only on tool dressing and tempering but upon drilling in general and is well worth having. But he does not attempt to go into the subject of treating special steels. Most of the leading oil well supply companies handle special steels for tools and if you can get in touch with their representatives in your neighborhood they can help you.

Typical Lufkin Baby Unit installation, Shell Oil Company of California, Freeman Lease, Round Mountain, California, wells on this lease 1600 to 2000 feet 3" tubing.

THE LUFKIN LINE

BABY IN SIZE

GIANT IN PERFORMANCE

The LUFKIN BABY UNIT

The Lufkin Baby Unit is doing a "man-size" job in California. Designed for shallow wells where powers are not practical, this unit is operating efficiently on wells 2000 feet and deeper tubed with 3" tubing and producing 250 to 400 barrels fluid daily with practically no gas pressure.

One of the major operators in California have standardized on Lufkin Units, as a result of the performance of their first few. Seventeen Units now in operation by this company.

A letter addressed to Lufkin or one of our branch offices will bring full information.

California District Office—801 Commercial Exchange Bldg., Los Angeles, California. E. P. Trout, Dist. Mgr.

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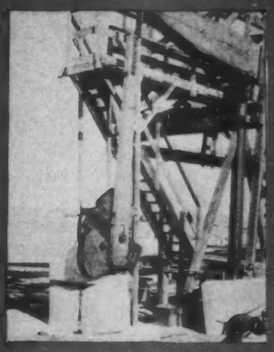
LUFKIN FOUNDRY & MACHINE COMPANY



One of seventeen Lufkin Baby Units in a row—Richfield Oil Company, West Front, Bakersfield, California, well depths 2000 to 2350 feet equipped with 3" tubing averaging 250 to 400 barrels fluid daily.

Tideland Development in California

Exploitation of Lands in Pacific Ocean Along Coast Seems to Be at Its Peak Now. State Has Financial Interest

By Frank A. Morgan
Chief Geologist, Rio Grande Oil Co., Los Angeles, Calif.

The State of California has entered the oil business or, perhaps we should say, the royalty or landowning end of the oil business due to its ownership and control of tidelands and adjoining submerged lands extending to the 3-mile limit over a distance of 1,190 miles of coast line.

Strangely, the exploitation and development of these lands is now at its peak with operations being forced ahead under the regulatory powers of the state surveyor general. That this condition should exist, due to the driving pressure for strong competitive operations enforced by one department of the State government while, at the same time, another official body under the Department of Natural Resources is striving for efficiency and conservation, is a strange anomaly.

There are now 84 tideland drilling permits and 13 tideland leases in effect along the California coast. Upon these combined properties, there are now 11 producing wells, 12 active drilling wells and a total of 30 additional operations which are either rigging up or standing idle as validation holes.

The conditions and events leading up to the present situation along the coast line are as follows:

A fundamental geologic and physiographic condition wherein the coast line is oblique to the controlling structural features of the richly productive coastal basins. This inevitably results in an offshore trend for certain structures which are favorable for oil accumulation.

Second in importance and among recent events, was the discovery of the richly productive Huntington Beach Field at the edge of the ocean in Orange County in 1920.

Next, comes the passage of the Tideland Leasing Act of May 25, 1921, wherein the surveyor general of the State was authorized to grant prospecting permits on the state-owned tidelands to be followed by leases in case of oil discovery.

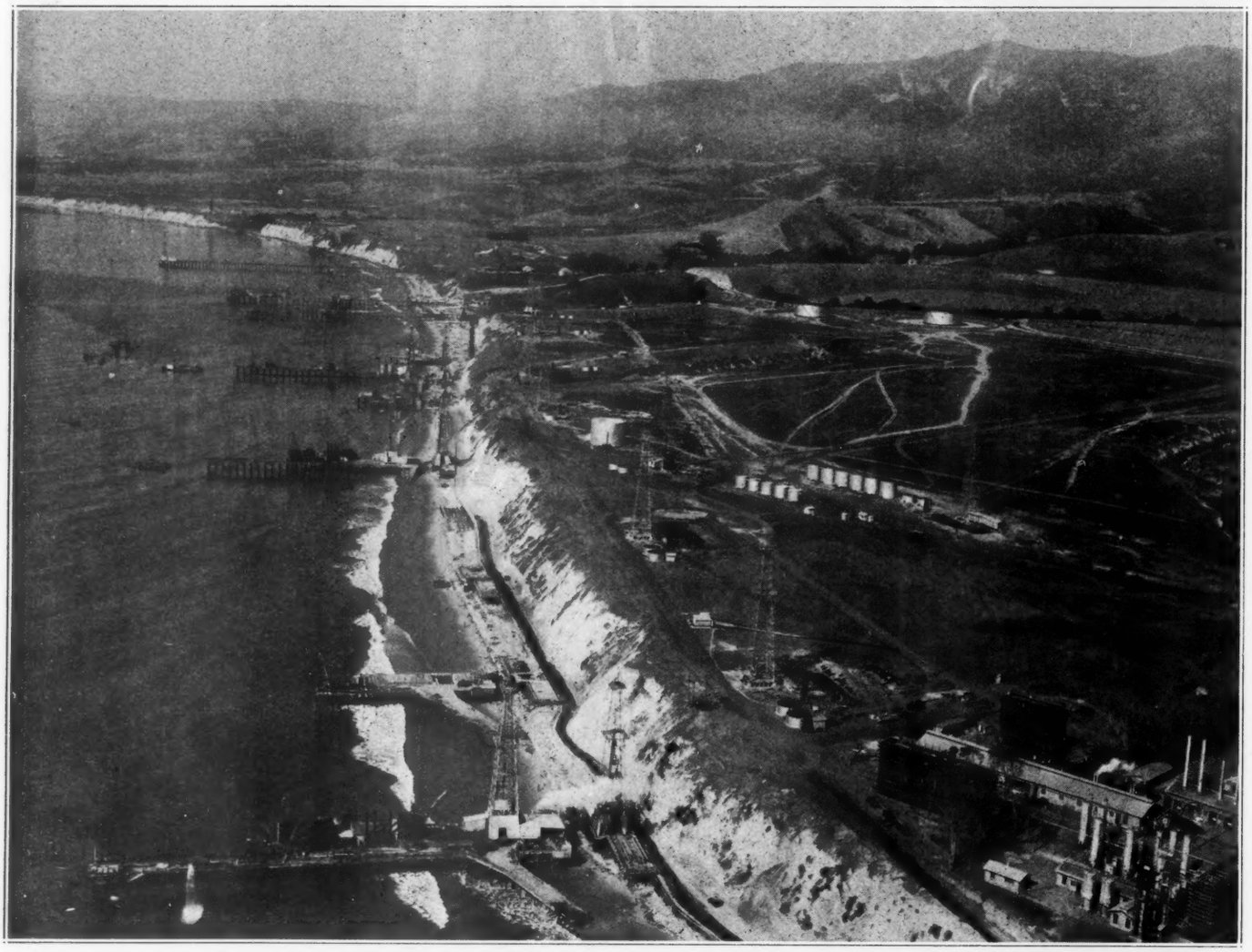
Next, followed a long period of inactivity due to inability under the law to acquire permits or drill wells within or near the limits of an incorporated city. This eliminated the tideland operations of Huntington Beach where there is probably a rich off-shore productive area. This inactivity continued for several years due to an apparent lack of eligible prospects along the coast.

In 1927, the Seacliff or Rincon oil field was discovered in Ventura County. The first well was drilled at the water's edge on the axis of a well-known anticline which trends off-shore. (See index map.) This discovery revived tideland interest as the productive area here was almost certain to extend off-shore. The permits covering the projection of the anticline were quickly taken. However, interest in tideland development again waned when the production of the field rapidly declined to a point of doubtful commercial value. The chance for a higher structural condition off-shore at Seacliff has been recognized and this has led to a resumption of operations here in recent months by the General Petroleum Corp.

With Seacliff, the prospects of the coast line seemed to be pretty well used up—this being apparently the last structure of promise extending off-shore in the Fernando formation (Pliocene) and the Fernando formation being then the only formation yielding substantial production in the Los Angeles and Ventura Basins. In the 60 miles of coast line yet remaining in the Ventura Basin and extending westward from Seacliff the older formations of Miocene, Oligocene and Eocene age including the well-known Monterey, Vaqueros, Sespe and Tejon formations make up the ocean terrace and adjoining foothills and mountains. Due to a time-worn prejudice which was probably justified by experience and precedent yet which apparently overlooked the actual geologic facts, this strip of territory was not favorably considered for its oil possibilities and the hopes of the state legislators to add a few active 5 per cent royalties to the general fund sank to a low ebb.

Elwood Stimulates Interest

The coast line was given fresh impetus in 1928 through the discovery of the Elwood Field by the Barnsdall-Rio Grande interests. The discovery well, completed July 26, 1928, was located within 400 feet of the ocean and resulted in the proving of a major accumulation of light oil in the Vaqueros (lower Miocene) formation; the location of the field being near the center of the long strip which had been theretofore so strenuously condemned because of its Vaqueros and closely related formations. The re-



By Fairfield Aerial Surveys, Inc.

Looking northwest across Elwood Field showing Barnsdall-Rio Grande wells on the Luton-Bell lease with offsetting tideland wells.

SPEED Makes the Appleman Bit

a time saver and a money saver

Many of the most progressive and efficient oil companies and operators have found that the APPLEMAN GUMBO BIT is a VERY IMPORTANT ECONOMIC FACTOR IN THE OIL INDUSTRY. This bit, because of its design cuts drilling costs to a minimum. Its cutting edges are designed to give great speed thus further cutting down expense by saving time.

Self-Sharpening

The blades are formed concavely favoring sharp cutting edges for both bottom and side of hole. Attained by hard facing, permitting wear on back to retain cutting edges. Hence the well known feature of the Appleman Gumbo Bit—SELF-SHARPENING.

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Straight water courses lead direct to cutting edges. This assures maximum cooling effect. Cuttings are rapidly broken up and washed away in solution. This means NO CHOKING UP.

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Shell Petroleum Corporation	St. Louis, Mo.
Sun Oil Company	Beaumont, Texas
Texas Company	Houston, Texas
Sinclair Oil & Gas Company	Houston, Texas
D. B. McDaniel Drilling Company	Houston, Texas
Marrs McLean	Beaumont, Texas
Rexal Petroleum Company	Houston, Texas
Unice Oil Corporation	Houston, Texas
Miller Drilling Company	Fort Worth, Texas
Riner Oil Company	Beaumont, Texas
Carter & Fultz	Houston, Texas
J. V. Redick	Tyler, Texas
Deep Test Oil Company	Beaumont, Texas
Smith & Hayslip	Houston, Texas
R. W. Townley	Houston, Texas
Mills Bennett Production Company	Houston, Texas
Geo. H. Echols	Mirando City, Texas
Hamill Drilling Company	Houston, Texas
Navarro Oil Company	Houston, Texas
Rycade Oil Company	Houston, Texas
Wolf & Laughlin	Houston, Texas
Albert Plummer	Houston, Texas
Bud Coyle	Houston, Texas
Boiling Dome Oil Company	Houston, Texas
H. R. Cullen	Houston, Texas
Cullen & West Production Company	Houston, Texas
Texas Southern Petroleum Company	Rockland, Texas
Vinton Petroleum Company	Ged, La.
Calcasieu Oil Company	Lake Charles, La.
L. Seiss Oil Syndicate	Lake Charles, La.
Moon Oil Company	Vinton, La.
Rex Petroleum Company	Vinton, La.
Harvey & Rush	Houston, Texas
Cranfill & Reynolds	Dallas, Texas
Geo. Bradley	Luling, Texas
Progressive Oil Company	Sulphur, La.
Port City Oil Company	Lake Charles, La.
Joe Davis	Beaumont, Texas
J. G. Sutton	Vinton, La.
Rayborn & Long	Luling, Texas
Baine & Anderson	Houston, Texas
Harrison Oil Company	Houston, Texas
C. A. Tucker	Dallas, Texas
Fort Bend Oil Company	Houston, Texas
Edgerly Petroleum	Vinton, La.
United North & South D. Corp.	Luling, Texas
Talbot & Markle	Houston, Texas

Appleman Gumbo Bits can be supplied by the following firms:

Speed & Service Iron Works	Houston, Texas
Continental Supply Company, Houston, Texas; Shreveport, La.; Luling, Texas.	
Oil Well Supply Company, Houston, Texas; Luling, Texas; Beaumont, Texas.	
Beaumont Iron Works	Beaumont, Texas
Mission Sales Company	Houston, Texas
T. T. Word Supply Company	Houston, Texas
Ged Iron Works	Ged, La.
Murray Brooks Hardware Company	Lake Charles, La.
Wilson Supply Company	Houston, Texas
Frick-Reid Supply Corporation	Luling, Texas
T. & L. Tool Company	Beaumont, Texas
Spindletop Machine Works	Beaumont, Texas
B. F. Cowan	Refugio, Texas
Trahan & Williams	Luling, Texas
Sour Lake M. & S. Company	Luling, Texas
T. T. Word Supply Company	Houston, Texas
Gulf Coast Iron Works	Barbers Hill, Texas
Gulf Coast Machine & Supply Co.	Beaumont, Texas

B. K. APPLEMAN

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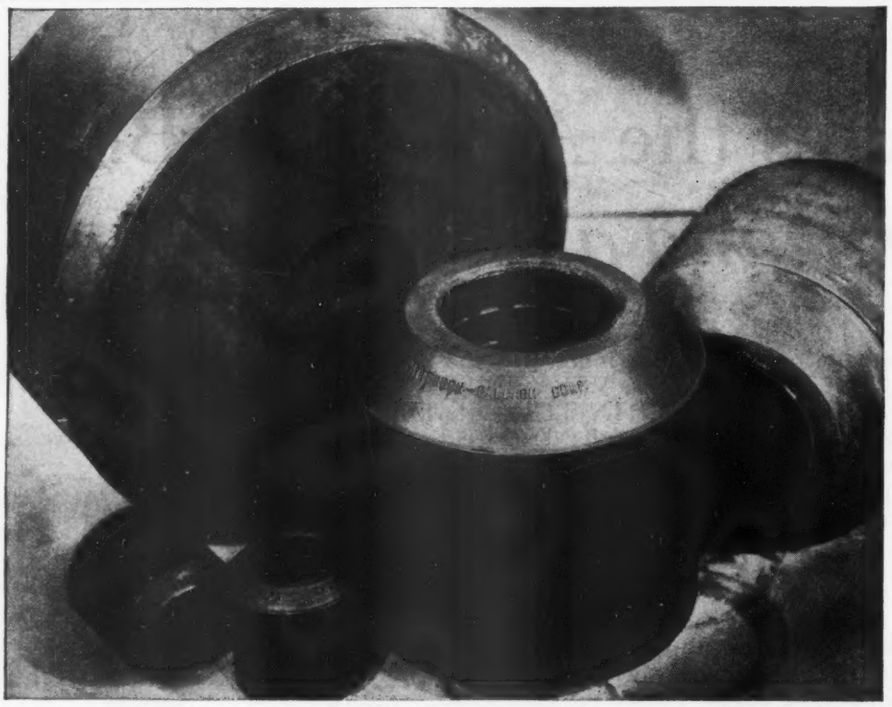

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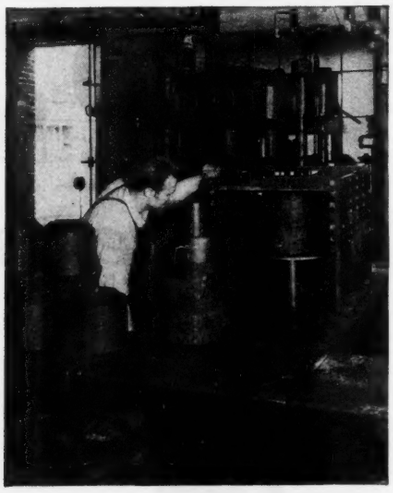
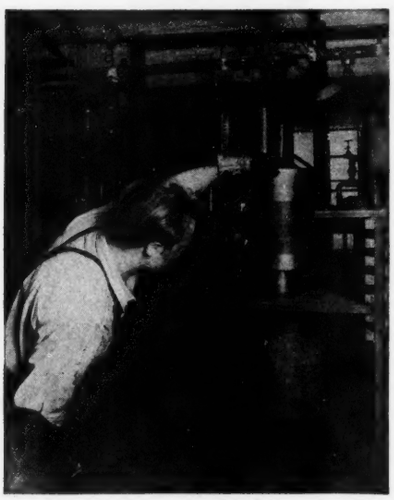
It's the mix and cure of rubber that counts

The rubber used in Bettis Protectors and Drill Stabilizers is unlike any other mix. It was developed solely for oil field service. Bettis engineers found it necessary to design laboratories and factory facilities for this sole purpose, as no other rubber factory in the country had the equipment necessary for this particular character of rubber. Every mix of rubber must meet extreme tests. Bettis rubber is seamless, highly tear-resistant and will withstand greatest tensile strains. When placed upon the drill pipe it offers a permanent surface, highly resilient, and requires no supporting members such as metal plates, pins or other gadgets.

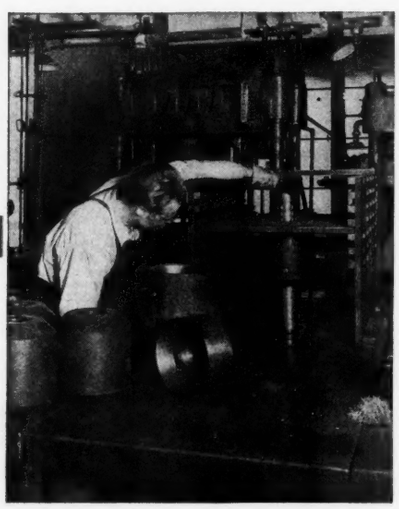
Bettis Protectors



Special hydraulic molding machine designed for manufacturing Bettis Drill Stabilizers.



Removing Stabilizer from hydraulic mold.



Removing core mandrel after molding.

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sults of the Elwood discovery are as follows:

1. Twenty-four wells have been completed in the field which, under recent tests, showed a potential daily production of 64,579 bbls. of 35 to 38 degree gravity oil.
2. Of the above number, and within the Elwood Field, seven state tideland wells have been completed with a total potential production of approximately 19,000 bbls. per day.
3. Thirty-three wildcat tests have been drilled in the general coastal area with a Vaqueros sand objective. These tests have not resulted in any important discoveries but, through showings of oil and gas, they have outlined at least six small areas as prospective.
4. A total of 83 prospecting permits has been granted along the coast between Seacliff and Point Conception upon which, counting wells drilling, producing and suspended, there are now 53 individual operations.

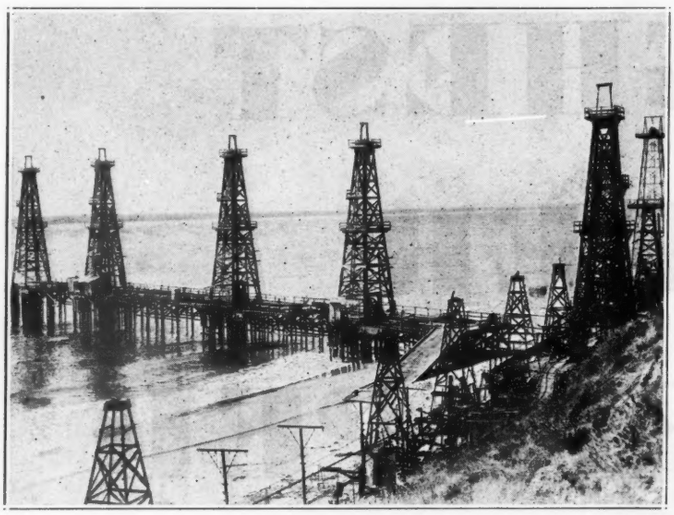
Although it seems fairly certain that the best geological prospects along the coast line, outside of the Elwood Field, have been adequately tested, thus leading to the conviction that tide land operations have reached their peak, this condition has been doubly assured by the last event in the cycle above outlined. This was the suspension of privileges under the Tideland Leasing Act by the legislature on January 17, 1929, after which date the surveyor general was authorized to refuse to grant further permits. The leasing act was repealed on May 28, 1929, saving, however, the rights of applicants prior to January 17, 1929.

The Tideland Leasing Law

The Tideland Leasing Law which was approved by the California State Legislature on May 25, 1921, and amended June 1, 1923, authorized the surveyor general of the State to grant any individual, corporation or partnership (citizens of the United States) a prospecting permit upon state-owned tidelands; such permits giving the exclusive right for a period not exceeding two years to prospect for oil or gas with a right to extend the life of the permit an additional two years and, in the event of the discovery of oil, to grant leases to such permittees for a period of 20 years with preferential rights in lessees to renew the leases for successive periods of 10 years. The consideration to the State for these exclusive oil drilling rights on state lands is a royalty of 5 per cent in respect to the portion of the lands upon which oil is discovered, and a royalty of 12½ per cent or more upon the remainder of such lands.

The preferred acreage feature of the State Tideland Law was copied almost exactly from the Federal Leasing Law. The State law provides that permits may cover, in some instances, as much as 640 acres, one-fourth of which, or 160 acres, may be considered the preferred area with a 5 per cent royalty. Here there enters a strange condition in the law which resolves all of the tideland leases and all areas within them to a straight 5 per cent royalty basis. This condition may be readily understood when it is seen that the permits are regulated to a maximum size of one-fourth mile along the shore by five-eighths of a mile extending off-shore; the total possible acreage being 100 acres and the State's requirement being a royalty of 5 per cent on everything up to 160 acres.

The making of terms such as these by a lessor in the State of California where the commonly accepted royalty is one-eighth or one-sixth, would seem to be poor business. It may be seen that there is provided an unusual margin of profit for brokerage on the State tidelands with a possible overriding royalty differential between the State and the ultimate operator running as high as 10 or 12 per cent. It is not to be implied that all permits are being operated through a brokerage medium, but the weakness in the law whereby the State shoulders all of the responsibility, constitutional and otherwise, for a mere 5 per cent royalty while a few individuals might easily secure an overriding 10 or 12 per cent is manifest.

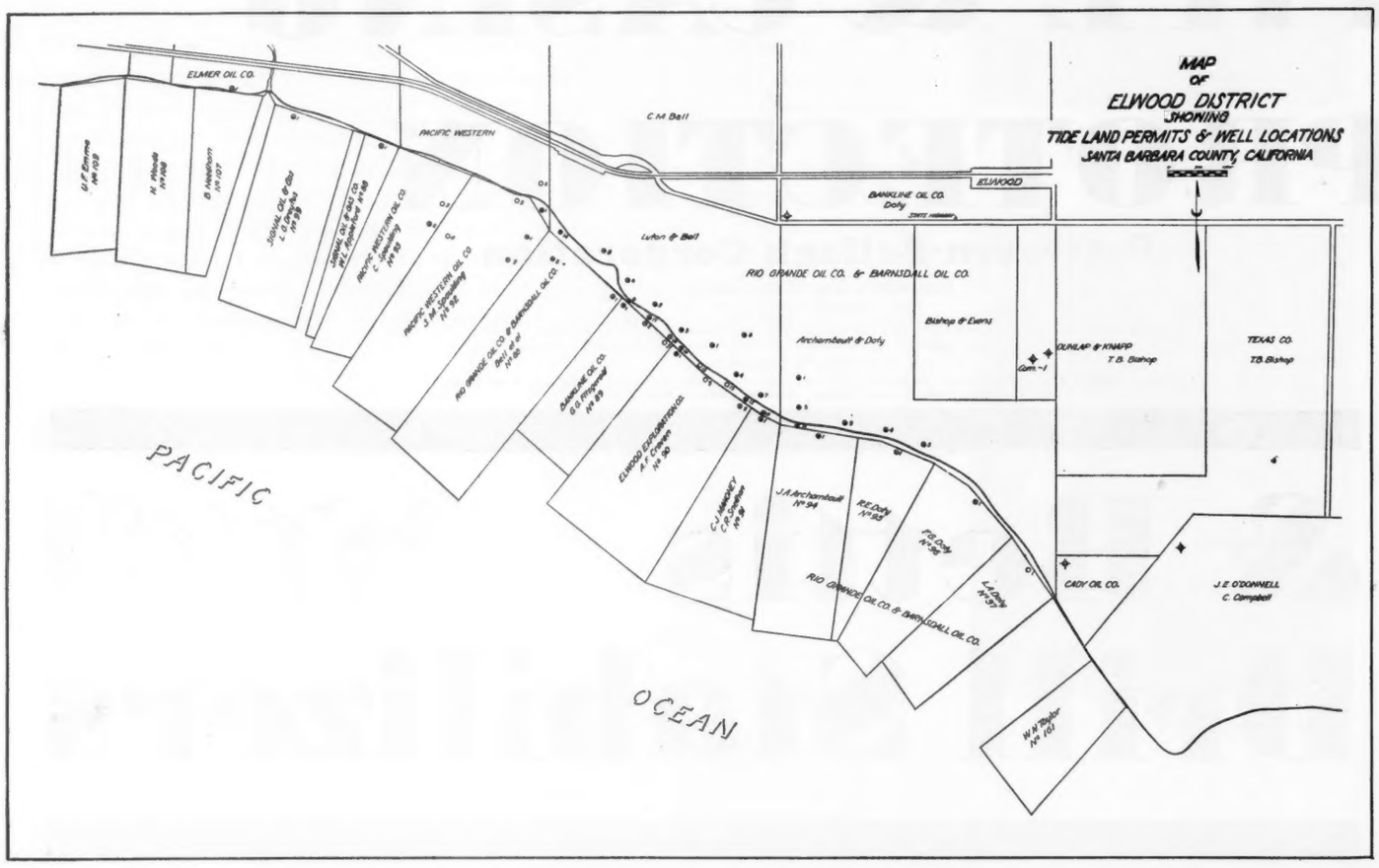


Wells of George F. Getty, Inc., located on State Permit L-16, at the edge of the old Summerland Field, Santa Barbara County, California. Note line of old wells with jack pumping equipment in foreground.

The law expressly prohibits the granting of permits or leases covering tidelands or submerged lands fronting on an incorporated city, or for a distance of 1 mile on either side thereof. Literal or upland owners of lands fronting on tideland properties upon which applications for permits had been filed were granted a preferential right within six months to make a filing on one permit covering one-fourth of a mile of beach frontage which filing would be honored above all others. The literal owners of extensive holdings along the coast were thus given no protective rights except for the small distance of one-fourth mile and although the landed estate of the literal owner might be very valuable, with the protection to his beach frontage just as important to him as the protection accorded an incorporated city, he was given no right to prevent operations on his beach by outside interests.

The western boundary line of the State of California runs from the boundary line between Mexico and the United States to the boundary line between Oregon and California. It extends 3 miles into the Pacific Ocean and includes the shore lines of all islands and embayments along and adjacent to the coast. The State of California is the owner of all land below tidewater and below ordinary high water mark bordering upon tidewater within the 3-mile limit; California having succeeded the United States as trustee of these public lands when admitted into the Union on September 9, 1850.

With 1,190 miles of coast line, including the coastal islands, the area of the State lands surrendered by the State Legislature to oil exploitation through the Prospecting and Leasing Act is 3,570 square miles, or 2,294,000 acres, less that area, negligible in total acreage, representing tidelands fronting on an incorporated city or within a distance of



THE HIGH COST OF PRODUCTION DEMANDS
The use of
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The Monroe Torpedo Bit

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Will positively drill a straight, round hole, free from deflection so often caused by boulders, inclined earth strata, etc.

Easy to dress.

Will straighten the most obstinate crooked hole.

Patent applied for.

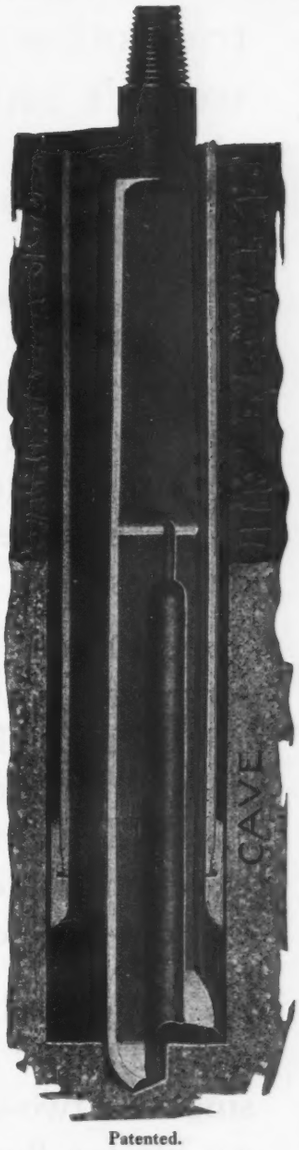
The Monroe "Talon" Friction Socket

A recent addition to the "Talon Line" family.

A series of stellited wickers spirally spaced around socket shell insures a positive hold that cannot be equalled by any thin wall or ordinary friction socket.

Descriptive matter and prices furnished on request.

The Akins Under-driller Bit



Patented.

Used where it is impossible to get casing deep enough on account of caving wall.

Drills an enlarged hole ahead of the casing. Drills and reams in one operation.

Save that expensive underreaming job.

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Manufacturers of the "Talon Line" Rope Tools

Cameron Tool & Supply Co.,
Cameron, West Virginia,
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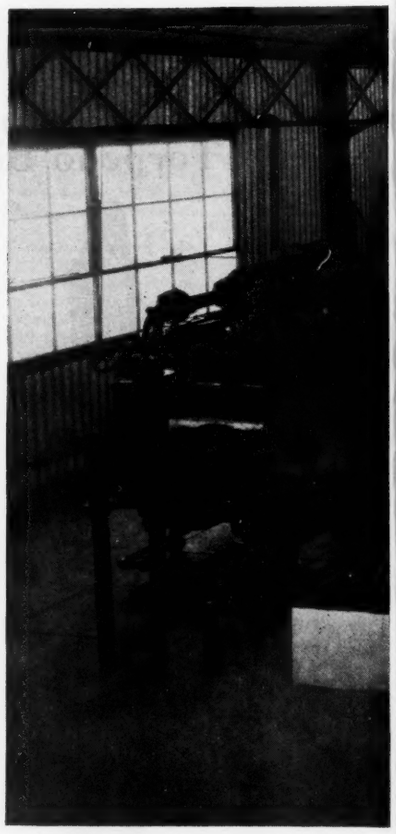
"Use the better tool first"

"TYPE TEN'S



"OUR company has always bought two cycle engines. We have tried other makes but somehow they weren't entirely satisfactory. Now they don't buy anything but Type-10's."

Wherever this unit is operated in comparison with other 2-cycle engines, the general opinion is that "Type-10's beat them all." By staying more hours on the load and by costing less for operation and maintenance, Type-10's often mean the difference between clear profit and a dead loss.

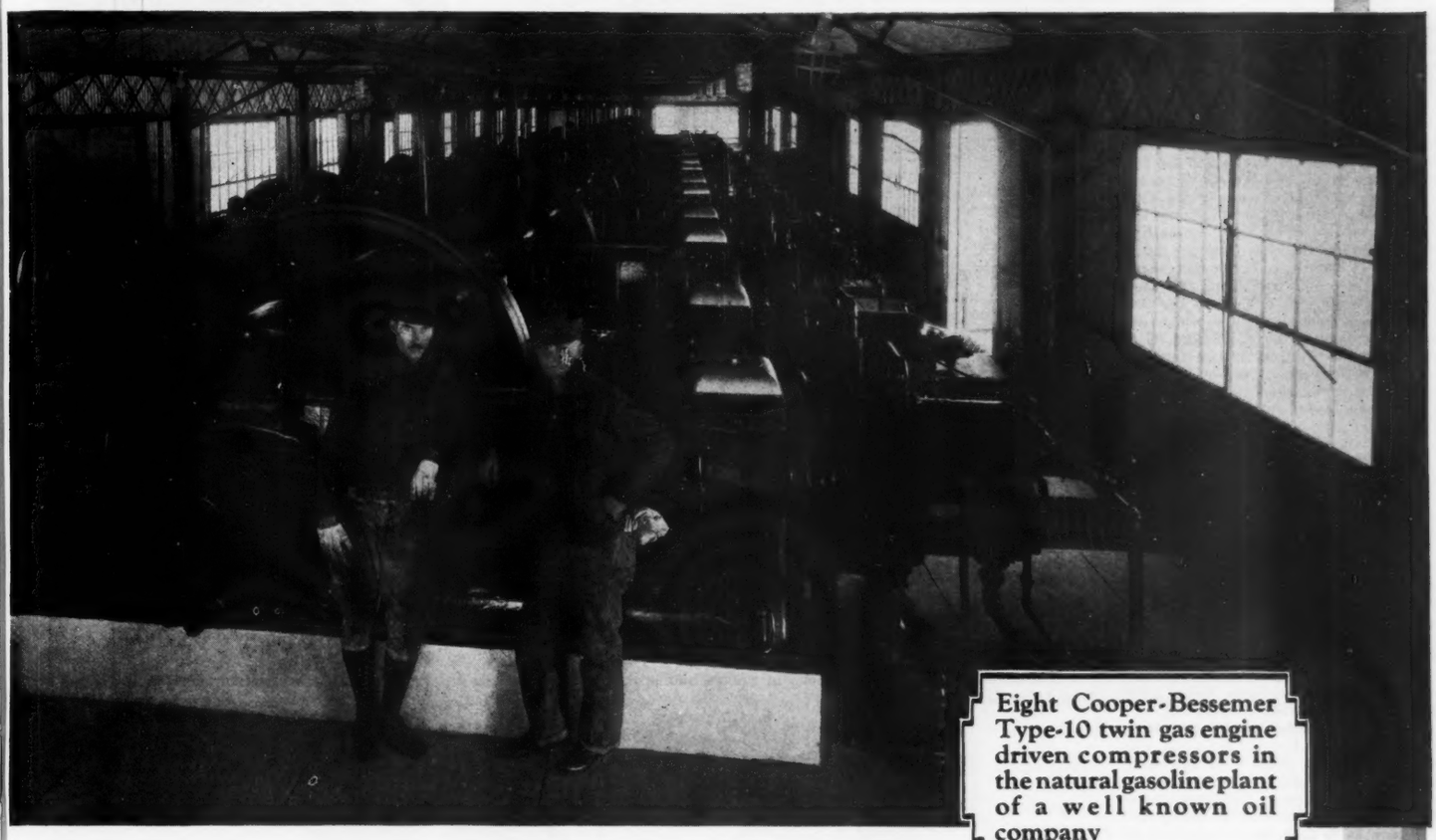
Type-10 recommends itself for compressor service for a number of other reasons. Its first cost is low. The engine can usually be shipped from stock for quick delivery. Cost of installation is low. Access for quick adjustment is easy. Most important — this engine is built out of the skill, science, experience and facilities possessed by the world's leading builder of 2 and 4-cycle engines for this service.

As a single cylinder 90 to 100 B. H. P. or as a twin cylinder 180 to 200 B. H. P. unit, Type-10 is equally adaptable for direct-driving single or two-stage compressors in natural gasoline extraction, air-gas lift for flowing oil wells, natural gas boosting, small main line compressor service, repressuring oil sands, handling still vapors and weathering gases in refineries.

COOPER-

YOU'RE ALWAYS SAFE IN

BEAT THEM ALL"



Eight Cooper-Bessemer Type-10 twin gas engine driven compressors in the natural gasoline plant of a well known oil company

Because of recent improvements and refinements, the New Type-10 sets an even higher standard in engineering and performance. The bed is in one piece — a sturdy, over-strength, semi-steel casting. Power cylinder is water-jacketed full length. Greater exhaust port capacity and wider bridges. Increased inlet port capacity. Scavenging valve has 50% greater capacity. Improved water circulating system with positive flow through exhaust bridges. Improved steel cylinder head. Improved type piston. Better lubrication for exhaust bridges. Gas economizer gives approximate 4-cycle fuel economy.

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BESSEMER

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1 mile on either side thereof. Due to the many apparent weaknesses and injustices in the law as outlined above, and due to the recent adverse public opinion and legal attacks on its constitutionality, the law was suspended by the legislative act of January 17, 1929, and officially repealed on May 28, 1929. The repeal provided that after September 1, 1929, no prospecting permits or leases should be issued for tidelands, saving, however, the rights of applicants prior to January 17, 1929.

The Elwood Field

The discovery of the Elwood Field in Santa Barbara County by the Barnsdall-Rio Grande interests established the first substantial production in the Vaqueros formation (lower Miocene) in the California Coastal area. The discovery well in this field, known as No. 1 Luton-Bell, was located on the ocean terrace at an elevation of 80 feet and at a distance of approximately 400 feet from the shore line. This well was drilled on the axis of a sharply folded anticline which was found intercepting the shore line in an east and west direction. The surface formations, as exposed in the ocean bluffs on the flanks of this anticline consist of Monterey shales and, from studies of the exposed section in the mountains to the north, these shales were found to be underlain by a succession of Temblor shales, Vaqueros standstones and Sespe shales and sandstone in descending order.

The discovery well was drilled through the lower Monterey shales and Temblor shales and the top of the Vaqueros sand was found at a depth of 3,168 feet. The Vaqueros sand proved to be an oil sand and, after coring 40 feet into it the 11-inch casing was cemented at 3,155 feet. On July 26, 1928, the well started producing with an even flow of 2,400 bbls. of clean 37 degree gravity oil per day, casing and tubing pressures being 1,000 pounds and 350 pounds respectively.

Since the completion of this first well, the Barnsdall-Rio Grande interests who control the major portion of the field, have in the interests of curtailment and conservation, carried on developments at a very moderate rate and, in the period of 19 months to date, have completed 18 wells which have a combined potential production of 48,000 bbls. per day. Of these wells, three have been drilled to completion on State tidelands and three additional tideland wells are drilling.

Additional tideland operations in the Elwood Field include one well producing and two drilling by the Pacific Western Oil Co. in the west end of the field, one well producing and one drilling by the Bankline Oil Co., one well producing and one drilling by the Elwood Exploration Co., one well producing by Caroline Spaulding, and one well producing by the Seaward Oil Co. The locations of the various properties and wells in this field are shown on the accompanying map.

The wave of exploratory drilling following the discovery of the Elwood Field and the proving of the Vaqueros formation has resulted in the localizing of several prospective areas where tideland operations are now under way. These areas include Carpinteria, More Ranch, Summerland and Capitan, the Seacliff area in Ventura County having been previously prospected. A small production of heavy oil was found in the Vaqueros formation at Santa Barbara mesa during the height of the coast line activities. It may be lucky for all concerned that tideland development was prohibited here due to the proximity of the city of Santa Barbara as the production of this field proved very disappointing.

Carpinteria Area

In the Carpinteria area, there is a marked structural interruption consisting of a series of sharp folds and faults affecting the exposed Miocene formations. Following the discovery of the Elwood Field, the Carpinteria structure was acquired and tested by the Continental Oil Co. The first well was located at the edge of the ocean terrace high above the beach and created justifiable excitement when a strong gas pressure was encountered at a depth of 3,990 feet. This well clearly demonstrated the favorable effect of the structural conditions here, however, the enormous gas pressure seriously hindered drilling progress and the well is now standing suspended at a depth of 4,450 feet with probable value as a commercial gas well.

A second well drilled here by the Continental provided information suggesting that both of these wells were located north of a fault zone. The next logical move was to the south across the beach line and in the ocean. On the basis of this theory, a deep test is now being drilled by the Continental company at the end of a pier 600 feet long on State Permit No. 124. Along this strip of the coast, the Continental Oil Co. has worked out a very novel and interesting grouping arrangement on a series of nine permits covering a distance of 6,500 feet along the structure. Eight companies have entered the picture in addition to the Continental Oil Co. and, in the event of successful production in the present well, a unit plan of operation is contemplated. The companies represented here are as follows: Continental Oil Co., Ohio Oil Co., The Texas Company, Rio Grande Oil Co., Independent Oil & Gas Co., Signal Oil & Gas Co., J. Vinmont, Hancock Oil Co., and Lincoln Drilling Co.

More Ranch Area

Following the excitement at Carpinteria, the next important move along the coast line was in the More Ranch area where the General Petroleum Corp. secured a large lease through competitive bidding. This area is located on the coast line some 3 or 4 miles southeast of the Elwood Field. There is here a rather indefinite structural condition affecting the exposed Miocene shales on the strength of which the General Petroleum's No. 1 More well was drilled. This well reached a depth of 4,533 feet and, like the Continental well at Carpinteria, it developed a heavy flow of gas and seemed to end up on the north side of a fault zone. This well was completed as a gasser and yielded as much as 60,000,000 feet of dry gas per day. It is now shut in.

With the knowledge that the No. 1 More well was a very crooked hole which drifted to the unfavorable side of a fault zone, the second well was started some distance to the south and east. This well likewise developed a strong flow of gas in the fractured lower Monterey shales and the Vaqueros sands were apparently reached at a depth of 4,300 feet and found to be barren of oil.

As a result of these developments 18 tideland permits were taken out on the adjoining coast line. One tideland well is being drilled by the General Petroleum Corp. and five validation holes are either drilling or completed at depths close to 1,000 feet. The present companies interested in tideland development here, in addition to the General Petroleum Corp., are: U. S. Petroleum Co., Macmillan Petroleum Co., and the Robert Bowles interests.

The heavy gas showings in these wells justified a great deal of enthusiasm as to the oil possibilities on this structure. It must be admitted that the prospects for oil production at this time are not very bright, however, a substantial gas production seems assured.

Summerland Area

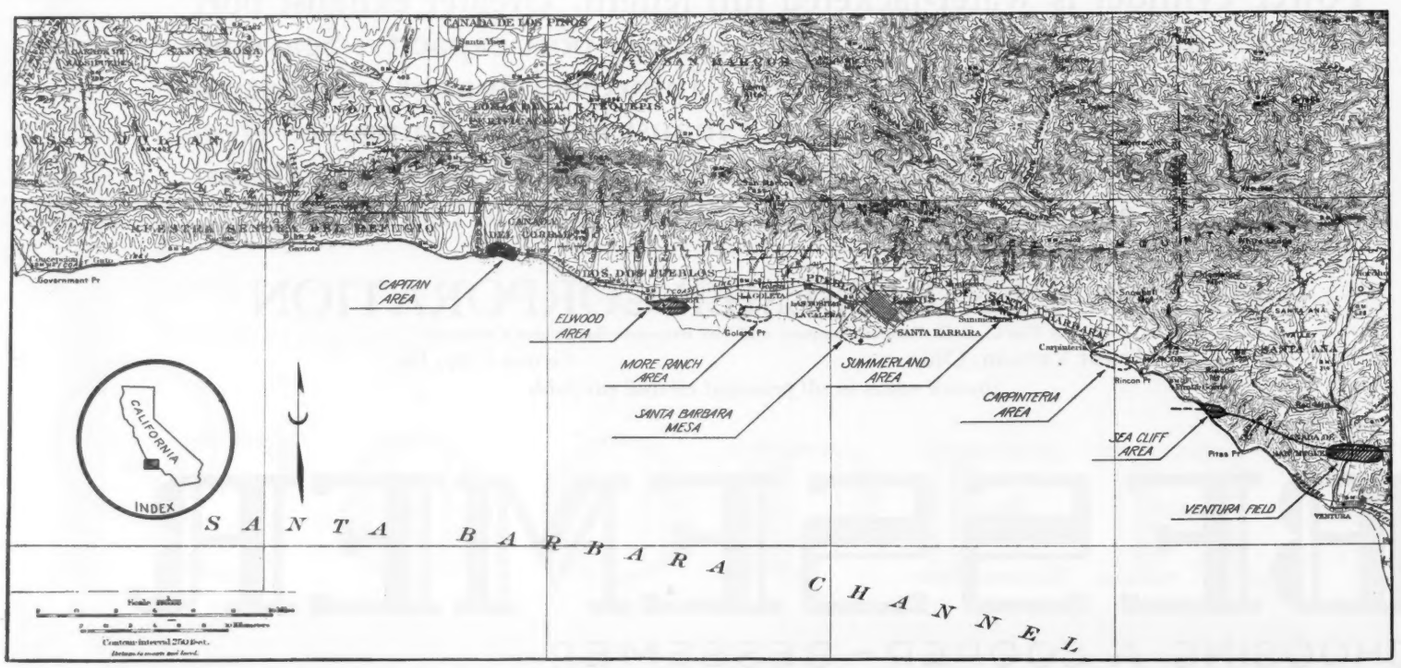
In the old Summerland Field, a great number of wells were drilled at the edge of the ocean and from piers extending out into the water, many years ago. The first wells were drilled here in the eighties and by 1907, a total of 412 wells had been drilled. This development has

(Continued on Page 240)

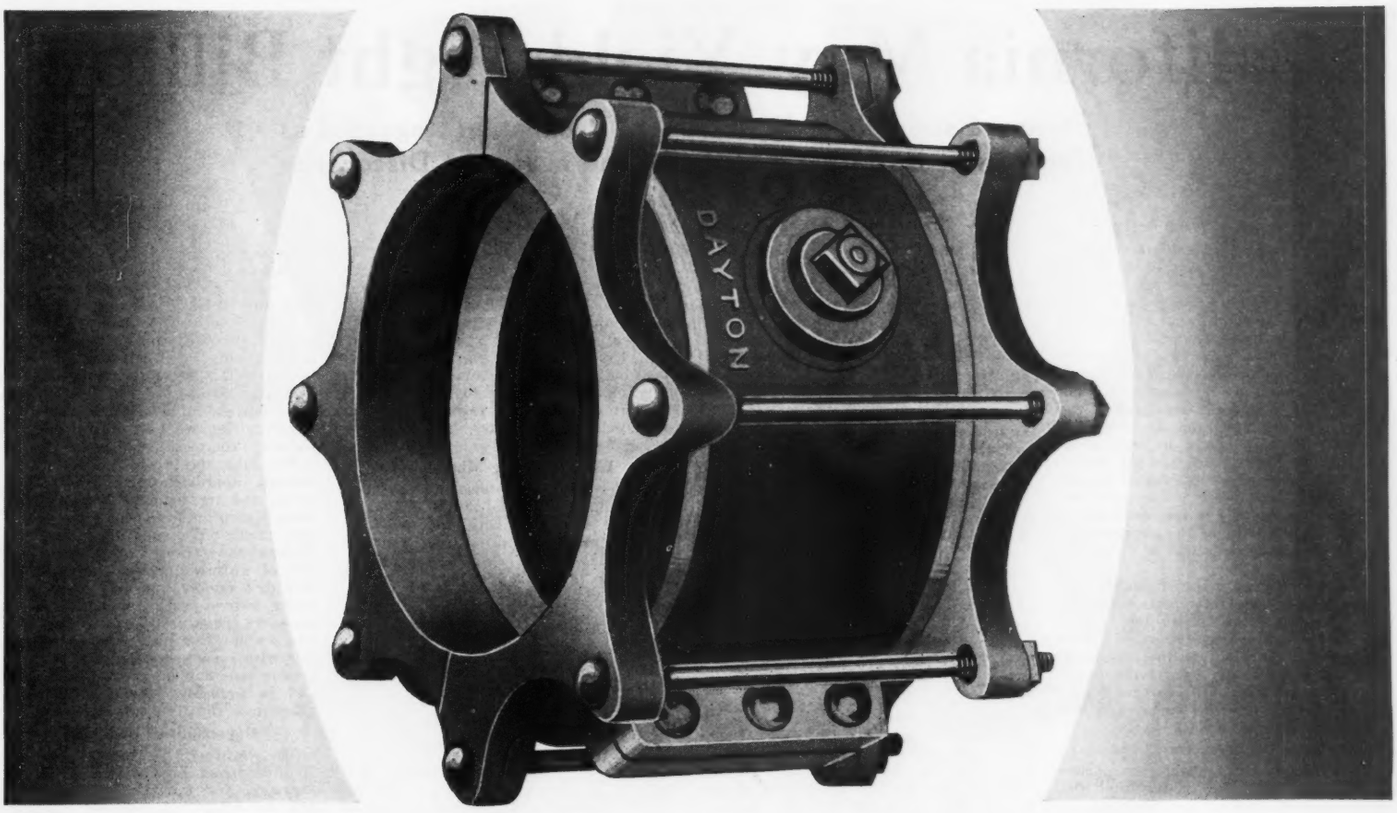
Tideland Operations

The principal tideland operations in proven and prospective areas along the coast at this time are summarized as follows: (See Index Map.)

County—	Area	Status	Principal operators	Total number tide land wells	Objective horizon	Estimated total depth
Santa Barbara	Elwood	Major field	Barnsdall-Rio Grande Pac. Western	7 Producing 5 Drilling 4 Standing 4 Rigs 3 Valid.	Vaqueros	3,200'+
Santa Barbara	Carpinteria	Prospect gas showings	Continental	1 Drilling 8 Valid.	Vaqueros	4,000'+
Santa Barbara	Summerland	Small prod. heavy oil	Getty	3 Producing 1 Drilling	Vaqueros (?)	1,200'+
Santa Barbara	More Ranch	Prospect gas showings	General Petroleum	1 Drilling 5 Valid.	Vaqueros	4,000'+
Santa Barbara	Capitan	Small prod. heavy oil	Oakburn (G. P.)	2 Drilling 6 Rigs 1 Valid.	Vaqueros	1,200'+
Ventura	Seacliff	Extension prospect	General Petroleum	1 Drilling 1 Valid	Fernando	2,600'+



Portion of southern California coast line in southeastern Santa Barbara County and western Ventura County showing areas of principal activity in coastal oil development.



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THE NATIONAL SUPPLY COMPANIES

California May Yield Eight Billion

Former Estimates of Ultimate Oil Production Regarded as Too Low. Eastern Companies Lead in Recent Discoveries

By J. E. Eaton
Consulting Geologist

The writer had thought this subject was sufficiently discussed in 1927, but enthroned prejudices in geology die hard, and once again he must get his typewriter out to show that our oils are not about to be exhausted.

The immediate cause of this article was one of the world's larger manufacturers of pipe and oil-well casing. The management had read some semiofficial estimate to the effect that in 1938 California production would be only about half that of 1928. As future oil production has a bearing on the future market for casing, the present writer was consulted. It took only a few moments to satisfy this company of the improbability of any such radical decline in California production.

But the incident caused thought. Apparently there are still reports being put in circulation to the effect that nearly all of our oil has been discovered. Now this leads inferentially to the correlative that we know nearly everything knowable about geology. The present writer takes exception to both views, and will present some remarks on both.

Known Reserves Increasing

The accompanying graph summarizes some estimates bearing on the total ultimate production of oil in California.

The graph was originally published in The Oil and Gas Journal for December 1, 1927, and has now been revised to the close of 1929. Briefly abstracted, the article which accompanied the original graph, maintained: (1) That early workers had underestimated the nation's oil reserves. (2) That these workers had built thereon a theory for untimely oil exhaustion which has caused fear and agitation. But (3) that later developments in geology, chemistry, and drilling have shown that there is little basis in fact for a fear of untimely oil exhaustion, and that it is erroneous, obsolete and harmful, and should be repudiated by technical men.

The original article is quoted as follows:

"The graph . . . cannot show the potential production of central San Joaquin Basin. This latter area is theoretically favorable for enormous productions, is three times as large as all Los Angeles Basin, and is practically untested. The older estimates of proven production shown were accurate for their time. It is new and undreamed of discoveries in wildcat areas that have caused the estimates to jump—and will probably keep them jumping for many years.

"California oil does not appear to be anywhere near exhausted. The State produced, or will have produced, around 1,326,000,000 bbls. of petroleum in the six-year period between 1921 and 1928. And yet, in spite of this tremendous yield, the rising estimates of proven production necessitated by new discoveries have left the visible reserves almost undiminished. I refuse, at this time, to estimate the total ultimate production of California. My last estimate, considered high when it was made, was indicated within a year to be 500,000,000 bbls. low."

Reserves Previously Underestimated

The writer was far too conservative in the quotation given above, for, in the three-year period since his 1926 estimate, the proven oil reserves of California increased approximately 2,125,000,000 bbls. Proven reserves increased four times as rapidly as oil was produced.

If we view it from another angle: Although California has produced about 2,500,000,000 bbls. of oil in the past 15 years, the proven oil reserve is now some 750,000,000 bbls. larger than it was 15 years ago. (See graph).

When analyzing the graph, remember that the early estimates of Arnold, Beal, White, and others were correct, because they did not deal with prospective oils, but only with proven reserves.

On the other hand, the 1926 prospective estimate by Eaton was obviously erroneous, because he attempted to estimate intangible future discoveries, and twice as much oil was discovered in the succeeding three years as he gave all future time. The writer welcomes this excuse to correct himself, because he is going to speak plainly in this article, and does not wish to be accused of favoritism. In this connection, let it be remembered that he is discussing institutions, not persons.

There is nothing wrong about revising our ideas when better information becomes available. No man whose estimates appear on the graph prior to 1929 need have any regret for the opinions held on the available evidence at that time. But if we were to maintain that the future should be estimated on our past inadequate figures, we would be wrong.

Estimates are Minimums

The estimates of proven and prospective production shown on the graph for the year 1929, are both minimums.

When estimating the 1929 proven reserve, the portion assigned to Kettleman Hills is only a little over half that recently estimated by Beal and others. Such larger estimates may very well prove to be correct, but the writer feels that the enormous amount of gas produced (which is not liquid in the sands) everywhere on structure, indicates an oil content per cubic foot of known sand far less than the California average. Great as Kettleman Hills is, it has possibly been overestimated.

The 1929 estimate of prospective production is also a minimum. The untested favorable territory in California would suggest a future discovery several times as large, but as this angle is exceedingly complex and dangerous, the writer prefers to show what he considers to be a minimum.

If we go deeper into the subject of future discovery, we find that it is intricately bound up with the progress and utilization of geology. Right at the start we find an astonishing thing—that the comparatively few organizations established here by eastern oil companies have made nearly all of our recent major oil discoveries. The writer, a California geologist, believes it best, for the good of our souls, to discuss this subject frankly.

Eastern Companies Lead

The four major oil fields opened in California during the past two years have all been discovered by companies whose headquarters are, or were, in the East. This despite the feature that they do only a small part of the geologic work and drilling in the State. To find the reason for this, we must briefly review the status of California geology.

Almost nothing is known about the geology of California. The State has incomparably the finest Cenozoic record in the world—several times as compelte as any in Europe or eastern North America. Instead of realizing our superior opportunities, we have developed an inferiority complex.

We take the world's finest Pliocene section, approximately 15,000 feet of rocks, and try to make it equivalent to some European fragment a few hundred feet thick. We take the finest lower Pleistocene section known, some 4,000 feet of warm-water rocks, and correlate it with a 50-foot upper Pleistocene cool-water terrace in England. Or, perhaps, we select the coolest 75 feet of our 4,000-foot warm-water succession and correlate this with some eastern glacial epoch forgetting that our superb record is unique, and is probably several million years older than the first known ice.

Opportunities Undeveloped

The world's finest Pliocene section lies 70 miles from Los Angeles by a paved highway, yet was undescribed until a year or so ago. A geologist can inspect the section without getting out of an automobile, yet few have seen it. The finest Miocene section in California, and perhaps in the world, is 12,000 feet thick. The writer has never found a geologist who has seen it. A few have worked its edges, but not its center, because they would have to climb a hill. A university for years has taught its students in the field correlations which are stratigraphically several thousand feet erroneous, when an adequate examination of a type 30 miles away could have obviated this.

It was not always thus. The United States Geological Survey has done much excellent work in California. Twenty years ago the genius of Ralph Arnold, George H. Eldridge and others erected enduring guide posts in California geology. All of the local survey work has been on a high plane, and has been accomplished by good geologists. But

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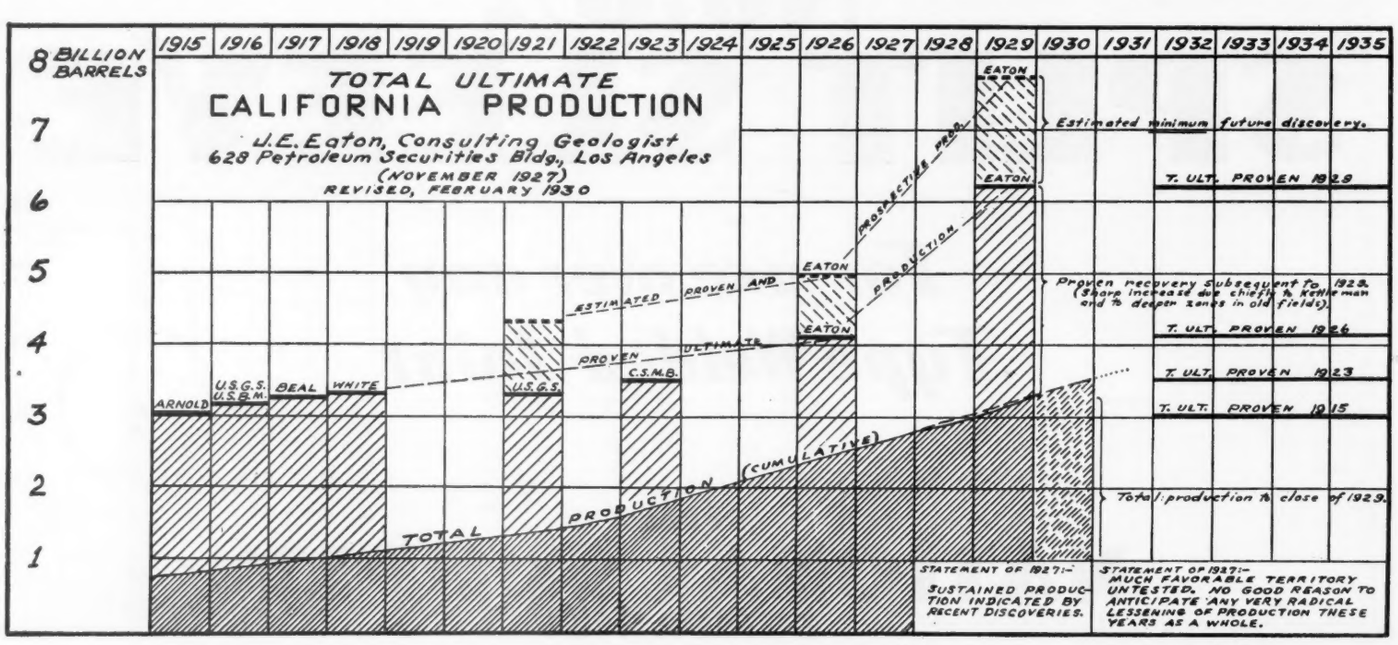

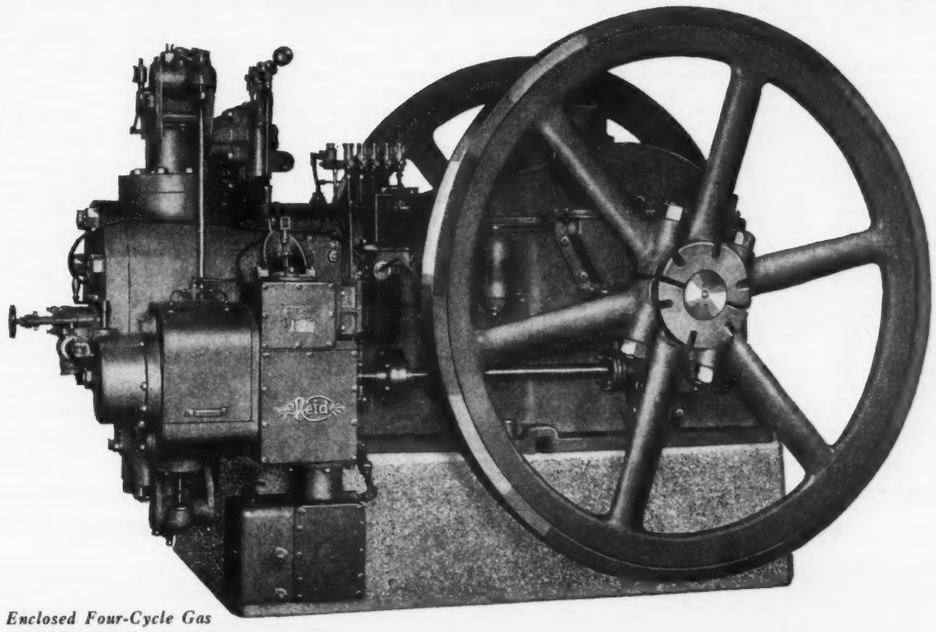

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THE ECONOMY *of* REID QUALITY

Economy in a gas engine is not established by low initial cost. It is the faithful year-in, year-out performance under all conditions—the built-in quality —that determines true economy.

The Reid Four-Cycle Gas Engine, with the stamina to withstand long periods of continuous operation without servicing or adjustment, has earned a reputation for truly faithful performance under all conditions. It has abundant power over a wide speed range, is practically noiseless in operation, and handles its load with smoothness and stability.

Machined main bearing housings that can be fitted with either Timken Roller Bearings or replaceable shells, Timken layshaft bearings, and a positive lubricating system incorporating an oil Purolator, are other quality features that make this Reid engine a really economical prime mover.

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Use of Liquefied Gas on West Coast

Technical Department of Standard of California Develops Product Known as "Standard Flamo" for Domestic Fuel

By H. H. Roberts
Standard Oil Co. of California

After several years of development by gas engineers and technicians in the laboratories of the Standard Oil Co. of California, a perfect liquefied petroleum gas has been developed for use of householders beyond the city gas mains. Great progress has been made in recent years in the manufacture of liquefied gas from natural gas wells.

Standard Flamo is a new product of this nature now marketed by the Standard Oil Co. of California. The product has a vapor pressure of approximately 125 pounds per square inch at 70° F. It is found to be the most satisfactory liquefied gas for household purposes. It operates satisfactorily from temperatures experienced in hot desert climates to temperatures ranging well below zero.

Standard Flamo, after being condensed at the natural gas wells, is transported in steel cylinders to the door yard of the consumer. These cylinders are manufactured in accordance with the requirements of the Bureau of Explosives and Interstate Commerce Commision, and are entirely safe for transportation and household purposes. Each cylinder contains 91 pounds of the liquid; this leaves sufficient vapor space in the top of the cylinder so that at no time will the liquefied petroleum gas completely fill the cylinder and thereby submit the walls to a positive hydrostatic pressure.

The equipment also meets the requirements of the National Board of Fire Underwriters, having been tested and listed as a Class "A" system by the underwriters' laboratories.

Properties of Gas

The liquefied gas now being marketed is essentially a mixture of propane and iso-butane. It is not explosive unless mixed with air and confined under proper conditions. Explosive conditions of this gas is no greater than, but similar to, the explosive qualities of any other manufactured or natural gas.

This liquefied petroleum gas contains no free carbon monoxide and is therefore nonpoisonous. The effects on a person overcome with it are about the same as submersion in water. The resuscitation treatment is the same.

Standard Flamo is a clean, safe, concentrated fuel. The product is naturally odorless; however, for the user's protection, an odorant has been added in order that the user will detect the presence of the gas in case a valve has been left open. When Standard Flamo is burning, there is absolutely no odor from the gas. It is practically free from sulphur and consequently does not tarnish brass fixtures and silverware in the home.

For several years past the Standard Oil Co. of California has engaged in research and investigation on the possibility of placing a liquid petroleum gas on the market and are now confident that a satisfactory product has been developed in their Standard Flamo. Standard Flamo is the cream of natural gas confined in cylinders ready for instant use. It is not a gasoline but is actually a dry gas burned in any household in the same way that city or natural gas is burned. It is listed by the underwriters' laboratories as one of the safest types of fuel and superior to oil and gasoline as used in stoves. Two cylinders, a neat, locked cabinet for housing them, reducing valves and gauges constitute the Flamo equipment ready to hook up to cook stoves, water heaters, gas lights, room heaters, gas refrigerators and other gas appliances.

Whenever a burner or gas jet is opened in the house it automatically releases the pressure in the cylinders through suitable valves and the liquid vaporizes to form a dry gas which passes through the reducing gauges and thereby supplies uniform pressure in the home.

Standard Flamo makes available city gas conveniences to any person who may desire it regardless of whether his dwelling is located in the city or country.

Equivalent in Electricity

In terms of B.t.u.'s, one pound of Standard Flamo is approximately equivalent to 6.3 kilowatt hours of electricity. One cylinder of the gas approximates the heat value of 600 kilowatt hours. One pounds of Standard Flamo is equivalent in heat value to approximately 40 cubic feet of manufactured city gas, and one cylinder of Standard Flamo equals in heat value approximately 4,000 cubic feet of manufactured city gas.

Standard Flamo is found to be more economical than electricity, depending somewhat, of course, on the variation in electric rates. Its convenience, efficiency and cleanliness justify its use in any modern home beyond the gas mains.

The Flamo equipment is simply loaned, installed and maintained by the Standard Oil Co. of California on a small down payment which covers the upkeep charges. A lesser quantity of this gas is required to do a definite amount of cooking or heating than with manufactured gas. For this reason, it is desired that gas equipment used with this product be especially adapted with smaller orifices and properly designed burners. The burners are usually set closer to the utensils than is the general practice with ordinary city gas stoves.

Many of the stove manufacturers are now equipping their stoves especially for the use of Standard Flamo. The Standard Oil Co. of California maintains a testing laboratory at Santa Fe Springs, Calif., where all gas appliances are tested and must meet a certain standard of efficiency and suitability for the use with the product before their field men will connect a standard Flamo set to the gas appliances.

There is a wonderful possibility for the future market of liquefied petroleum gas and whether the market of the future "makes or breaks" is dependent upon the economy and satisfaction to the householders. For the future welfare of the industry, the company refuses to connect its equipment to other than approved ranges and gas appliances. One cylinder of Standard Flamo contains

(Continued on Page 246)

VIEW OF THE SIGNAL HILL SECTION OF THE LONG BEACH FIELD

FOR THE TOUGHEST SERVICE

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TOUGH!
NEVER GET
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BATTLE CRY OF THE ROUGH RIDERS

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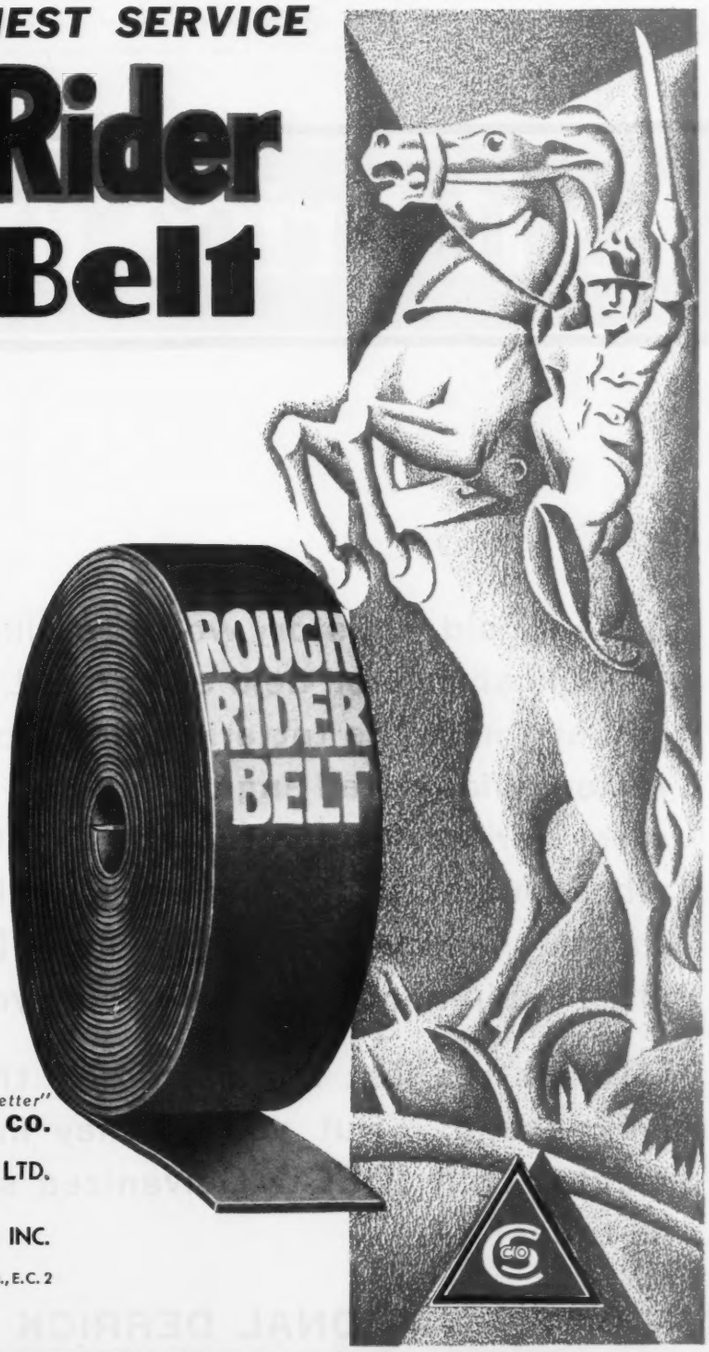
Rough Rider Steam Hose
Hel-Fi Steam Hose
Rough Rider Rotary Hose
Wilcox Special Rotary Hose
Wilcox Special Belts
Severe Service Brands of Belting, Hose and Packing.



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IT'S an old, old story worth retelling and particularly applicable to oil field equipment. Just look around you and note the tottering old wooden derricks...the rotten, dilapidated engine and belt houses...even the steel derricks (unprotected by galvanizing) through whose members the blade of a penknife may be easily thrust. Compare these to any IDECO Galvanized steel equipment and then supply your own moral.

Perhaps it's just human nature that folks refuse to look ahead. Put your money in long pull investments...buy IDECO Galvanized steel equipment at all times!

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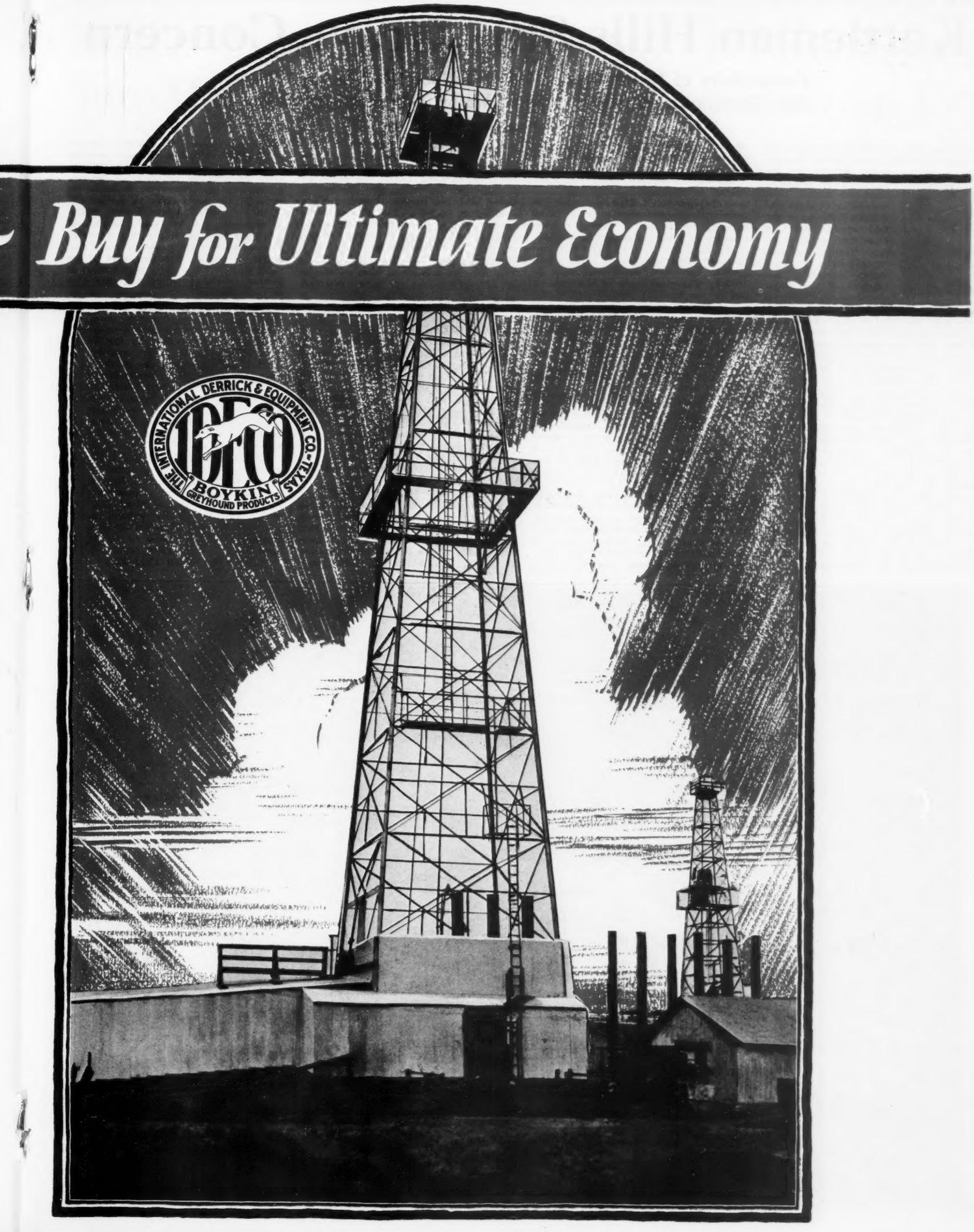
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GREYHOUND PRODUCTS

Kettleman Hills Stirs Grave Concern

Productivity of North Dome Makes Outlook Most Serious That Has Confronted Operators Since Major Development Began

By L. P. Stockman

It has been several years since the output of crude oil in California dropped below 600,000 bbls. per day for any length of time and there is little possibility of state production declining to normal requirements for some time to come except through mutual curtailment or regulatory legislation. Executives of the major companies and many of the progressive independent operators have been cognizant of this condition for a long time, but they have been unable to gain the co-operation of a small minority necessary to effect permanent stabilization of the price structure by regulating or restricting production.

None of the several attempts to curtail production by co-operative regulation has been entirely successful. Production has been drastically reduced, but the goals set never have been achieved. Unless all producers continue to restrict production the attempts of major companies to pay producers a price commensurate with production costs and hazards must be abandoned. Results of the recent six-day flow test conducted in flush fields revealed that in the final analysis the major companies have borne the brunt of curtailment at Santa Fe Springs and Long Beach. The Barnsdall, Rio Grande, Continental, Pacific Western, Honolulu Consolidated and several others also showed substantial curtailment.

The chronic overproduction which has existed in California during the past several years will continue for an indefinite time unless some means is found to keep production to actual requirements. As a matter of fact the outlook is the most serious that has confronted operators since the present major development cycle got under way back in 1921-2. The chief cause of this concern lies in the unusual productivity of the north dome of the Kettleman Hills field of Kings County and the possible ultimate development of substantial production of correspondingly high gravity oil in the middle and south domes of the same general anticline which can be traced as far south as the Lost Hills-Belridge area.

Greater Threat Than 1923

The possibility of unrestricted drilling at Kettleman Hills upon expiration of the present agreement presents a threat far more disconcerting than the outlook in 1923 when several flush fields in Los Angeles basin were undergoing simultaneous development.

The North dome of the Kettleman Hills is capable of producing 75,000 bbls. of high grade oil and an almost unlimited amount of natural gasoline right at this moment. If operators take the same position at Kettleman Hills when the present agreement expires on July 1, 1931, as that now assumed by many operators in other areas undergoing present development, it is predicted that crude oil at Long Beach and Santa Fe Springs will be selling for 10 cents a barrel with few buyers. Gasoline is the dominating factor in the price of crude oil and will continue to be owing to the inability of marketers to dispose of fuel oil and refinery residuum.

Natural gas from Kettleman Hills is very lean, averaging less than one gallon of natural gasoline for each 1,000 feet of natural gas, but this deficiency is more than made up by the large amount of natural gas produced. A normal 5,000-bbl. well in some other field with a gas oil ratio of say 3,000 feet of natural gas to each barrel of crude would yield approximately 5,000 gallons of natural gasoline on the basis of three gallons for each 1,000 feet of gas treated. In contrast with this, a 5,000-bbl. well at Kettleman Hills will yield 100,000 gallons of natural gasoline even on the basis of only 1 gallon of natural gasoline for each 1,000 feet of natural gas because wells in this field produce upwards of 100,000,000 feet of natural gas daily.

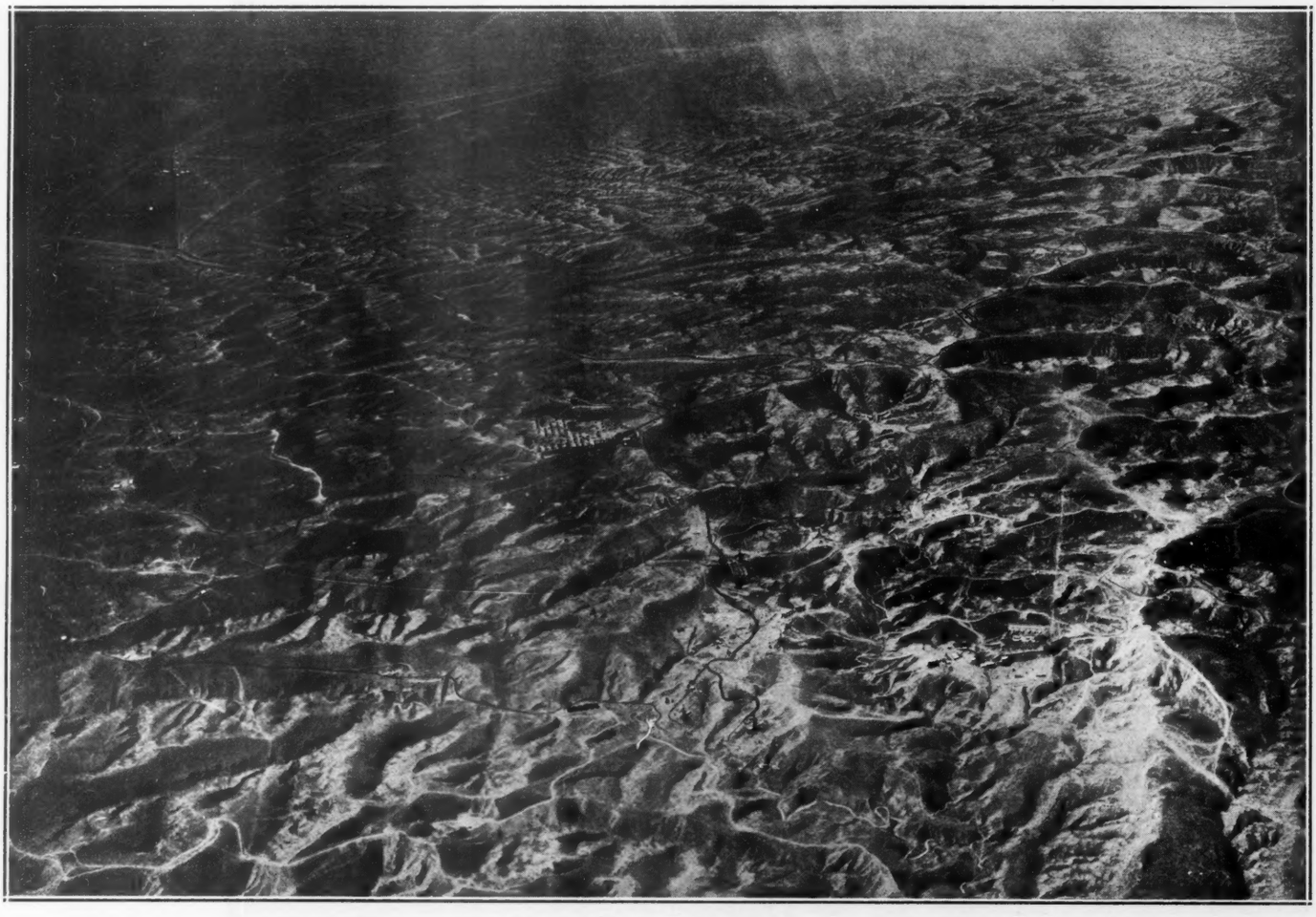
Importance of Area Obvious

The importance of this area on future production is too obvious to require comment, especially in view of the fact that the productive limits of the north dome are already known to be over eight miles in length. The middle and south domes of the Kettleman Hills remain untested as the dusters drilled in those sections were not located as favorably with respect to structure as might be desired. In one case, the Ohio's No. 1 Smith, located in the south dome in section 35-24-19, favorable indications were logged before bottom water was encountered and there is a possibility that a second test on this acreage might be found productive if drilling were concluded at the right point. This well, incidentally, is located in close proximity to the axis of the structure.

Operators in both the middle and south domes, with one or two exceptions, are prevented from engaging in development work until July 1, 1931, by the Kettleman Hills agreement sponsored by the United States Department of the Interior. Operators in the north dome have been working on plans whereby future work can be undertaken either through unit operation or zone development in order to prevent this section from demoralizing the prize structure of the entire country.

Kettleman Hills is believed to be the greatest potential oil structure ever opened up in California both from a productive standpoint and its possible effect on the crude and refined oil market. This major anticline, which extends southeastward through Kings county from the Coalinga field of Fresno county to the Lost Hills field of Kern county, a dis-

(Continued on Page 229)



View of the Kettleman Hills Field

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Submarine Geology Opens Possibilities

Its Use in Determining the Value of Leases Held Along the California Coast May Result in Valuable Contribution to Science

By L. P. Stockman

Tideland development resulting from successful submarine drilling in the prolific Elwood Field of Santa Barbara County has become an important factor in California during the last year and while this work will be more or less limited in the future because practically every potentially productive area along the seacoast has already been tied up by tideland permits, the use of submarine exploration in determining the value of leases now held may ultimately result in a valuable contribution to the science of geology. Little research has been done along this line up to the present, but the work should prove of greater importance as time goes on.

Structural mapping by submarine geology has already been used in two areas along the California seacoast to determine as far as possible the structural trend so as to reduce the hazard of submarine drilling to a minimum. This work is especially adaptable in areas like Huntington Beach where production is actually known to exist out in the open ocean beyond the high tide line for an undetermined distance.

Exploration work of this character based on aerial photography was used more than a year ago by the Barnsdall and Rio Grande at Elwood and an aerial picture of the Fairchild aerial surveys is shown here. Attention is directed to the evidence of structure as indicated by kelp beds appearing in the lower part of the picture. The connection between the kelp beds and the trend of the structure is obvious when it is recognized that the roots of this seaweed probably are embedded in either a soft shale body or some other soft member to the exclusion of hard rocks or reefs. The kelp beds indicate that the submarine part of the structure at Elwood is plunging toward the area shown at the bottom of the picture and dipping toward the lower right hand corner. The clearness of the ocean water at this point is especially marked and by close examination it is possible to trace the Rio Grande Oil Co.'s submarine pipe line from the shore line to the tanker which is being loaded approximately 2,500 feet seaward from the tide line.

Used By General Petroleum

The General Petroleum Corp. a short time ago concluded an exhaustive geological study of structural conditions in the Rincon Field of Santa Barbara County by utilizing submarine geology. The proximity of producing wells to the shore line in this field left no doubt that production could be expected out in the ocean, but the extent and scope of the submerged structure could not be determined by merely projecting production contour lines. To clarify this situation, the company's geological department resorted to submarine geology and while no basic facts have been released as to actual findings, the outcome is reported to have been gratifying to those sponsoring this radical departure from the usual projection method. As a result of this submarine geology, the General Petroleum built a steel pier extending out beyond the tide line for a distance of 1,700 feet to facilitate drilling operations on No. 2 Ferguson, the company's initial tideland project at this point. This well came in prematurely during the course of a water test recently flowing at the rate of 500 bbls. of oil daily. The flow was subsequently killed, however, and drilling resumed as the primary objective of No. 2 Ferguson is to establish the possibility of deep prolific production.

The log of this tideland project indicates that the Rincon structure is rising as it extends seaward and correlation work indicates the possibility that the major part of the Rincon structure is submerged. This is especially important as subsequent development may result in the completion of large flowing wells with additional depth. Deep exploration work inside the tide line has failed to result in commercial production although two wells showed sufficient indications to justify the expectation that tideland development might prove productive of better results. The significance which attaches to this is that deep production similar to Ventura Avenue might be developed out in the ocean if subsequent drilling indicates that the apex of the Rincon structure is submerged beneath the ocean floor.

Rincon Field Disappointing

The Rincon Field has proven somewhat of a disappointment up to the present time because of the failure of operators to get substantial production from the sands of this field which is located at the extreme western end of the 14-mile Ventura Axenue structure. It is needless to say that the outcome of drilling operations on No. 2 Ferguson will be watched with interest. The General Petroleum recently was granted permission to extend its existing Ferguson pier 700 feet. The new addition will shoot off in a southwesterly direction from the end of the present pier and extend down to Neil Needham's tideland drilling permit No. 55 which will be developed by the General Petroleum. The new extension to the Ferguson pier will be 22 feet wide except at the outer end where the average width will be increased to approximately 75 feet.

The method employed by the General Petroleum in geologizing the submerged area at Rincon by submarine geology is interesting. When this work was started it was the intention merely to undertake to trace a few of the submerged reef beds in an effort to locate the anticlinal axis which was assumed to be present. As work progressed additional possibilities presented themselves however, and this subsequently led to extensive preparations predicated on the possibility of recording strikes and dips. It was decided to use a Brunton compass with the edges of the glass sealed off with paraffin, but this proved ineffectual as the pressure of the water even though shallow, caused leakage. It then was decided to fill the compass with fresh water to eliminate air bubbles and this method proved successful.

Base Lines Run From Shore

In order to correlate submarine readings and to obtain a comprehensive picture, base lines were run out from the shore line at intervals. These lines were established normal to the strike projected from the mainland and by transit intersections recorded observations under water were accurately tied to the land control. It was a relatively simple matter to take a reading where the diver operating from a tug boat had the good fortune to run across an outcrop but in most cases it was necessary to remove the overlying sand by a high pressure jet. This required an hour or more depending on the action of the tide as in some instances wave action would completely fill the hole made. Where the wave action was found troublesome it was necessary to repeat jetting operations several times before the strike and dip could be recorded. When outcrops were found it was the practice to take several readings along the strike to arrive at an average.

Difficulty was encountered in keeping oriented when submerged because of the rolling action of the water and it was found necessary to record the direction of the dip instead of the strike. This was done by leveling the back of the compass instead of the side against the bedding plane and then reading the north end of the needle. In recording the degree of dip it was found more practicable to remove the top and use the back of the compass thereby reading the complement of dip and subsequently converting.

Axis of Structure Found

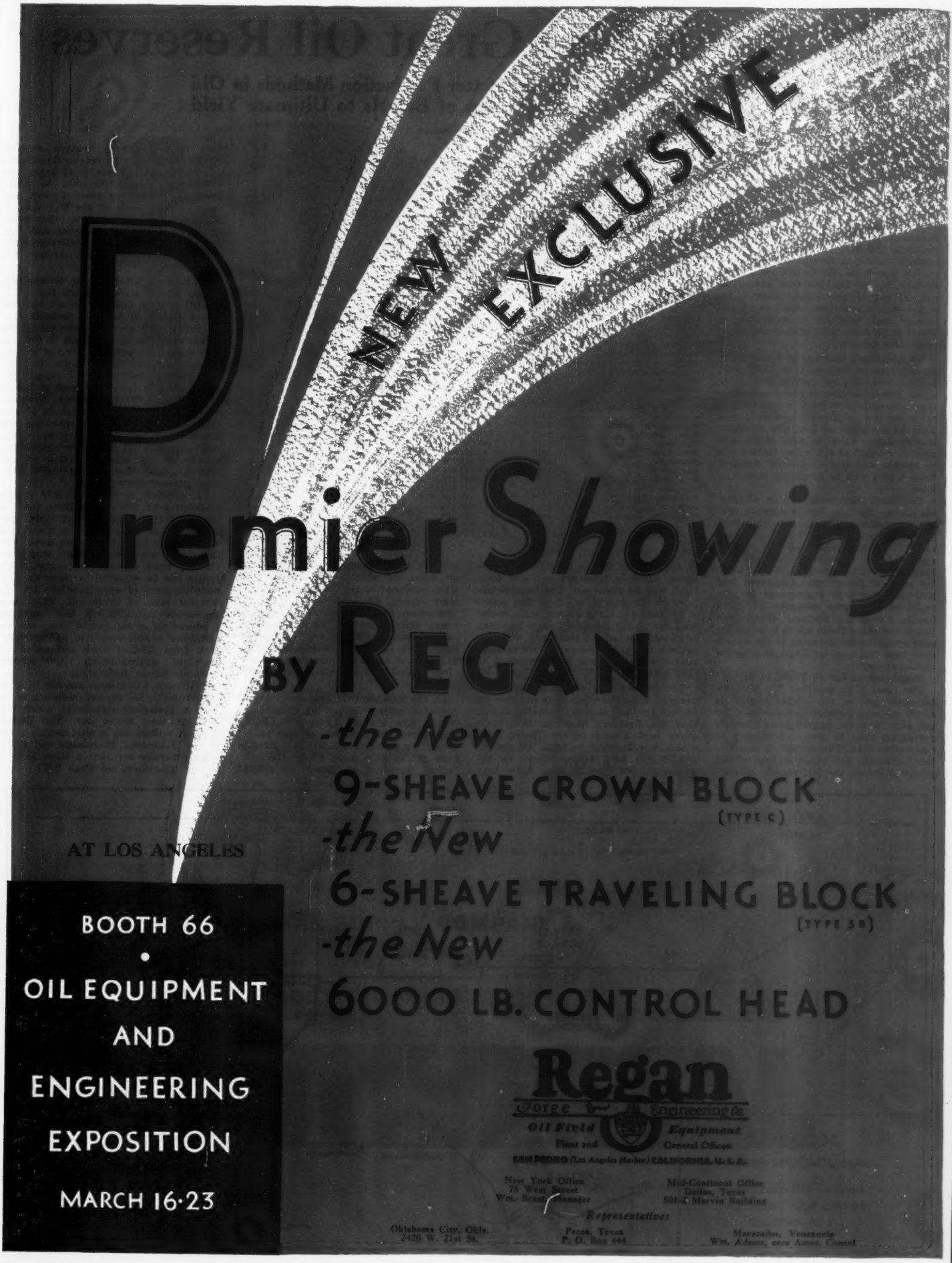
As a result of this submarine exploration the axis of the Rincon structure was located at several points and it was possible to record attitudes on both flanks. The uniformity of the strike along each of the base lines laid out from the shore removed doubt as to the degree of plunge and a further check on the axial trend was indicated by gas bubbles breaking on the surface of the water along the axis as projected.

Upon completion of this submarine exploration aerial photography and observation were used to check the results just as had been done by the Barnsdall and Rio Grande at Elwood. This aerial survey showed a definite alignment of the seaweed or kelp, the roots being attached to the sandy phases of the stratum. The location of kelp beds at both Rincon and Elwood with respect to structure tends to indicate that it might be possible to map an entire area by recording the position of kelp beds. The serious handicap to extensive submarine geology is the inability to get readings where the sand deposit on the ocean floor is more than 25 feet thick as it is almost impossible to effect a sufficient removal. The difficulties which would be experienced in removing any large quantity are quite obvious in view of the fact that it is necessary to jet away about 100 square feet of the surface sand in order to uncover enough stratum upon which to take readings.

Submarine geology has been receiving careful consideration during the last few months because of the large amount of tideland drilling either already under way or scheduled to be started in the near future.

By Fairchild Aerial Surveys, Inc.

Looking east across Elwood Field, showing Luton-Bell and Doty leases of the Barnsdall-Rio Grande companies and offsetting tideland operations. Note proximity of main line of railroad, paved state highway and tanker loading off-shore through the Rio Grande submarine line.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California Has Great Oil Reserves

Opening of New Fields and Better Production Methods in Old Ones Expected to Add Millions of Barrels to Ultimate Yield

By L. P. Stockman

Overproduction and resulting waste of crude oil and natural gas in California reached such proportions in 1929 and early 1930 that the oil industry found it necessary to adopt stringent measures to prevent a complete breakdown. Crude oil curtailment, gas conservation and the enactment of regulatory legislation which prohibits the waste of natural gas were methods employed to effect stabilization or lay the basis for future regulation. Failure to use the inherent energy of natural gas to the highest degree, together with evaporation losses, on ground storage and wasteful consumption, is bound to preclude the ultimate maximum production possible.

No immediate shortage of crude oil or natural gas is imminent in California, but this fact does not provide ground for either overproduction or uneconomic consumption. Overproduction is just as serious a factor in California now as it ever was. As a matter of fact, the situation is even more critical because of the substantial amount of crude and refined oils in storage and several prolific dormant fields which will be developed sooner or later.

The heavy overproduction in California during the last decade suggests pertinent questions which seem to have been more or less avoided. These questions are: (1) Is California faced with a shortage of crude oil within the next few years? and (2) Have a sufficient number of new pools been discovered and held in reserve to compensate for the depletion of crude resources at Long Beach, Santa Fe Springs, Huntington Beach and other fields which have undergone intensive development to the extent that there has been no diminution in the visible supply?

Requirements for 10 Years in Sight

The answer to question No. 1 is an emphatic no, as the visible supply is ample to meet refinery requirements for the next 10 years, provided the State is not called upon to meet a deficiency in some other area. The answer to No. 2 is that, although the large amount of oil produced during the last decade naturally reduces the future production of the State, there is more oil in sight than there was 10 years ago. The natural impulse is for one to question this statement but an investigation will reveal that the visible supply 10 years ago was relatively limited, as compared with the outlook today, as the possibility of deep zone development was not recognized at that time.

Field—	Date of discovery	Total production to Jan. 31, 1930	Proven acreage	Recovery per acre	No. prod. wells
Coalinga	1896	313,068,727	16,480	18,997	749
Kettleman Hills	1928	2,554,327	100	25,543	4
Kern River	1899	277,826,693	8,100	34,300	971
Mount Poso	1926	2,309,948	1,000	2,310	69
Round Mountain	1927	364,082	500	728	14
Fruitvale	1928	842,711	100	8,427	13
Midway-Sunset	1900	671,774,445	44,000	27,828	2,118
Elk Hills	1919	108,614,194	4,879	22,262	211
McKittrick	1898	79,130,704	2,050	38,600	282
Belridge-Lost Hills	1910	60,454,413	4,551	13,284	337
Wheeler Ridge	1923	2,161,263	220	9,823	33
Santa Maria	1902	125,207,354	8,000	15,652	211
Watsonville	1880	1,263,839	100	12,638	7
Summerland	1894	2,837,579	150	18,917	97
Santa Barbara	1929	13,913	10	1,391	1
Capitan	1929	2,795	10	280	1
Elwood	1927	11,333,104	500	22,666	24
Rincon	1927	2,388,713	100	23,887	31
Ventura Avenue	1912	85,309,854	2,500	34,124	144
Ventura-Newhall	1870	45,698,666	5,000	9,140	470
Fullerton (Brea Olinda)	1897	133,218,901	1,750	76,125	368
Los Angeles-Salt Lake	1894	62,599,196	1,320	140,998	311
Whittier	1912	14,124,161	720	19,617	168
Montebello	1917	84,068,998	1,205	69,766	177
Coyote	1912	120,681,551	2,100	57,467	210
San.a Fe Springs	1921	266,865,605	1,750	152,495	412
Richfield	1919	61,420,219	1,250	49,136	298
Huntington Beach	1920	163,834,178	2,750	59,576	560
Long Beach	1921	386,476,002	1,650	234,228	935
Torrance	1922	64,627,167	5,000	12,925	593
Dominguez	1923	42,193,744	1,000	42,194	59
Rosecrans	1924	22,566,797	500	45,134	103
Inglewood	1924	68,712,616	870	78,980	225
Seal Beach-Alamitos	1926	44,797,201	1,000	44,797	161
Newport	1900	107,835	100	1,078	4
Potrero	1927	403,188	100	4,032	10
Lawndale	1928	430,353	100	4,304	7
Playa Del Rey	1929	66,181	10	6,618	1
Total		3,330,351,217	121,525	27,405	10,386

The greater part of California's total production to date has been chalked up during the last decade, notwithstanding that the discovery of oil in this State dates back almost to the Drake well, which was finished in 1859. Of the 3,308,367,975 bbls. recovered up to the present, 2,062,639,821 bbls. have been brought to the surface during the last 10 years, of which 1,209,035,326 bbls. were produced in the last five years. In other words, 62 per cent of the total production to date was in the last 10 years, and 37 per cent in the last five years. During 1929, in spite of curtailment work, California produced 292,036,911 bbls. of crude oil, exceeding the previous record year of 1923 by 28,308,016 bbls.

Of the 2,062,639,821 bbls. of crude oil produced during the last 10 years, Long Beach has accounted for 383,178,210 bbls. during its life span of nine years; Santa Fe Springs, 261,563,311 bbls. in nine years; Inglewood, 68,031,425 bbls. in six years; Seal Beach, 43,866,712 bbls. in four years; Ventura Avenue, 83,632,128 bbls. in 10 years; Huntington Beach, 162,561,766 bbls. in 10 years, and Dominguez, 41,861,136 bbls. in seven years. In comparing these figures, one must not lose sight of the fact that no deep zone exploitation has taken place at Inglewood and Dominguez and that drilling and production activities have been retarded at Ventura Avenue and Seal Beach.

Old Records Likely to Be Overlooked

The figures given indicate that there is still a large quantity of oil in California and it is believed probable that California will produce more oil in the future than has been brought to the surface during the entire history of the petroleum industry in the State. In addition to the amount of oil actually in sight, conservatively estimated to be approximately 4,250,000,000 bbls., increased efficiency and improved methods of production consisting of repressuring and gas storage, improved pumping equipment, the gas lift and other mechanical devices, should increase future production to more than 5,000,000,000 bbls. from present known fields.

In addition to this, we may expect discoveries of new fields from time to time so that instead of being faced with a possible shortage of oil in California we are more likely to produce more than the normal requirements for a long time. On the basis of these estimates, California can be expected to show an ultimate recovery of approximately 10,000,000,000 bbls. of crude oil. This total represents 3,308,367,975 bbls. actually produced up to the end of last year, an additional visible supply of 5,000,000,000 bbls. from existing fields and an allowance of approximately 2,000,000,000 bbls. for future discoveries.

California has a large amount of acreage favorable for the accumulation of oil from a geological standpoint which has not yet been tested out. The State's greatest reserve lies in that section north of the Tehachapi Mountains and geologists generally say that a large part of

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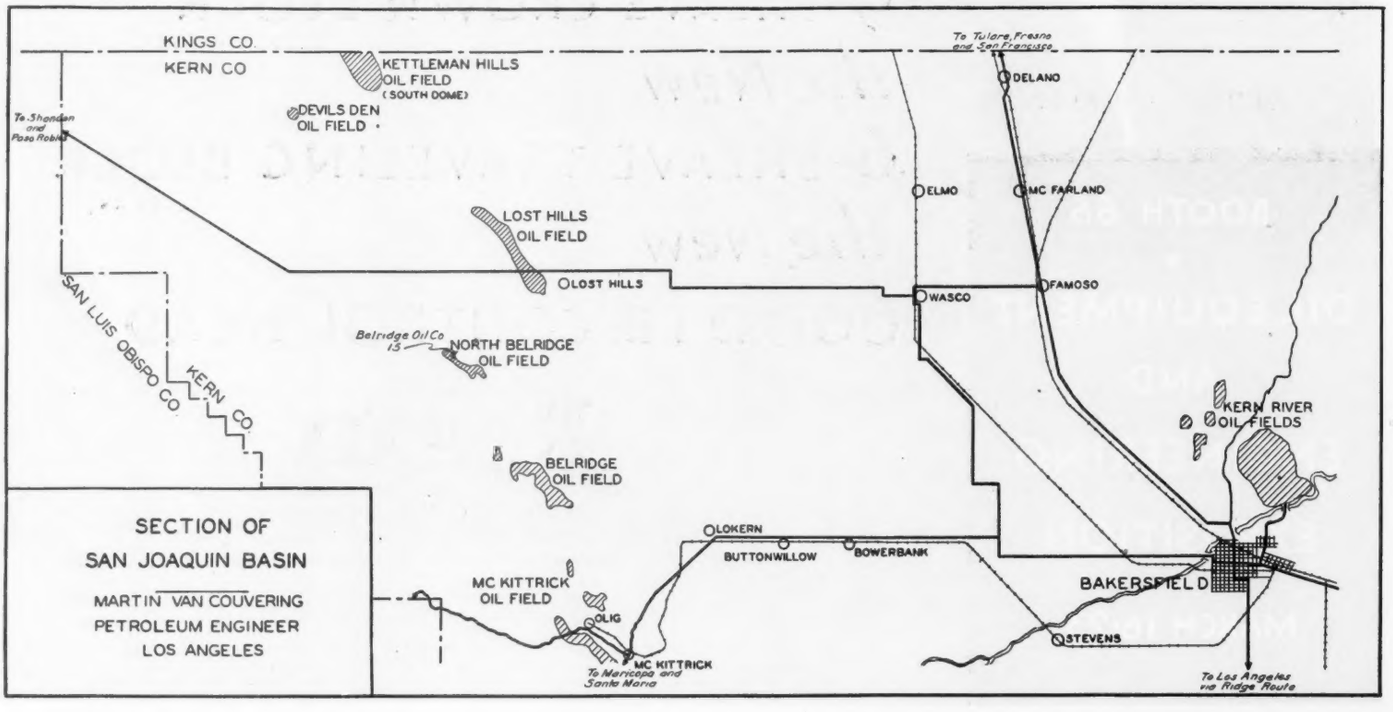

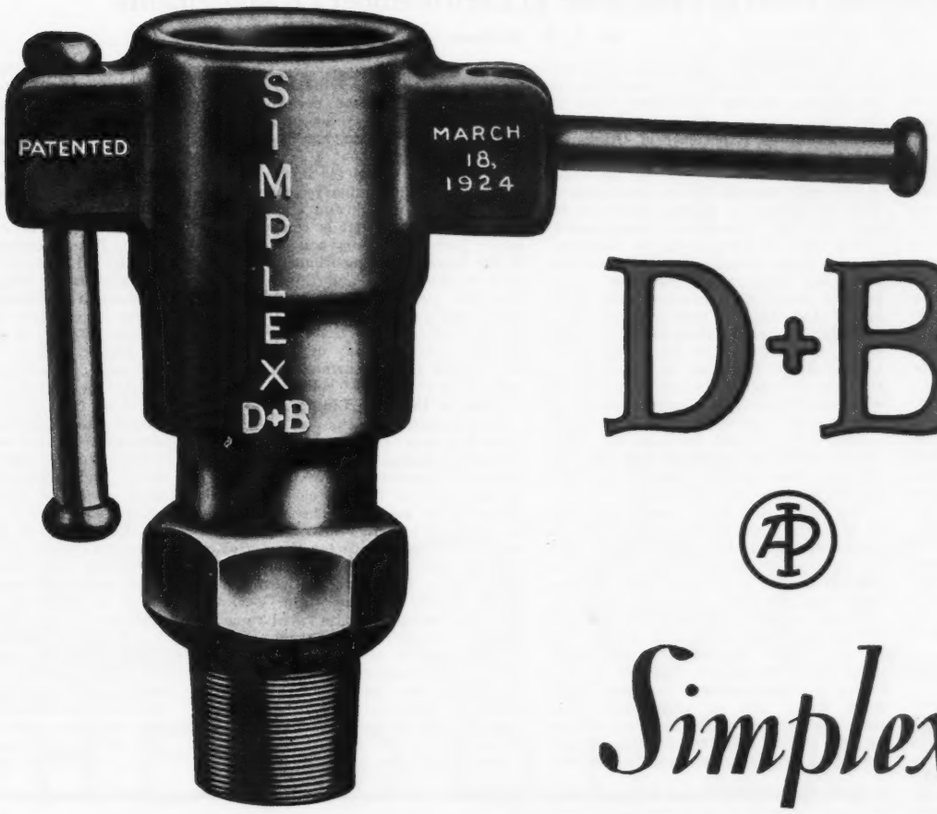

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CONTINENTAL

Operators Solve Waste Water Puzzle

Co-operative Organizations in California Provide Service and Distribute Costs in Proportion to Each Member's Requirements

By L. P. Stockman

The town lot drilling campaigns which have characterized development of California's major fields in Los Angeles Basin during the past several years have presented perplexing problems, the most important of which has been that of disposing of waste water. This has proven a costly item to individual operators and the failure properly to protect adjoining leases or highways has led several times to prosecution in civil actions or citation by the State Fish and Game Commissioners. Out of the common dilemma was born the idea of a co-operative organization which should serve each operator in proportion to his individual needs and in which the cost would be in proportion to the service he received.

The idea first achieved form in Southern California with the incorporation on June 24, 1926, of Oil Operators, Incorporated, to serve the Long Beach Field and later the Alamitos Heights section of the Seal Beach Field. On October 22, 1927, the Waste Water Disposal Co. was incorporated to serve the Brea Canyon, Richfield and East Coyote oil fields in Orange County. This was followed by the incorporation on March 29, 1928, of the Santa Fe Springs Waste Water Disposal Co. to serve the Santa Fe Springs, Whittier, Montebello and West Coyote oil fields.

All these concerns are nonprofit corporations, incorporated under the laws of California and as the various properties served by these systems produced varying quantities of waste water, one of the first problems of organization was to determine the basis upon which the participating companies should share the cost of constructing the waste water system. Obviously the member should pay in proportion to his use of the system. The Oil Operators, Incorporated, ruled that a fair distribution of the cost would be had by charging the member a flat price for each of his wells and each dehydrating plant served by the system. This amount is termed the membership fee. Operating costs are assessed on the same basis and each member has one vote for each $100 of the amount he has paid for membership.

More Complicated Formula

In the two other companies a more complicated formula was followed in arriving at the amount of the membership fee, both companies using the same method. For these companies the working capital consists of the amount of money estimated to be necessary to build the system and to this sum each member contributed in proportion to his estimated use of the system. The capital is termed the investment fund and the members receive membership certificates instead of stock certificates and each member has one vote in the affairs of the corporation for each $100 of his interest in the investment fund.

To make allowance for the exigencies of operations in the field it was recognized that, for various reasons, an operator's actual production of waste water might be greater or less than his estimated production and it was arranged that each member's contribution of waste water to the system would be metered and at the end of each year for the first five years' operation, each member's proportion of the total amount of water received would be compared with the proportion which such member expected to contribute. If he delivers into the system less than the anticipated proportion, he will be credited with one-fifth of the difference in cost; if he delivers more he will be correspondingly debited. His interest in the investment fund at the end of five years will be his final interest, subject to no further adjustments for volume. Operating costs are paid by each member in proportion to his interest in the investment fund at the time.

Profit by Experience of Others

In the design of separating plants each company tried to profit from the experience and example of its predecessors. This advantage, of course, could not be had by Oil Operators, Incorporated, which was the pioneer in the construction of these systems. This company's separating plant is a group of large earthen reservoirs located on the bank of the Los Angeles flood control channel. In the first of these the oily waste water is received and it is conducted to the others in series by bleeding off the water from under the floating oil which is recovered by a continuous skimming process and after passing through a dehydrator is sold for road oil. The oil-free water is discharged into the Los Angeles flood control channel approximately 4 miles from the ocean.

The separating plant covers an area of 35 acres with 16 acres additional to supply space for the other facilities and is required to handle from 70,000 to 100,000 barrels of waste water per day. More than 8 miles of pipe lines is required to collect the waste water and deliver it to the separating plant. As it was found impracticable to locate these lines for gravity flow, it is necessary for the members to pump their waste water into the pipe lines. The completed system represents an outlay to date of over $260,000 and the annual operating cost is approximately $60,000.

Waste Water Disposal Co. separating plant at Cypress and Orangethorpe Avenues, in the Fullerton area of Orange County, consists of three adjacent concrete-lined basins, having an area of water surface of about 1¾ acres. The waste water is conducted into a concrete box where a preliminary separation of oil and water occurs and approximately 90 per cent of the oil is removed. The water flows from this box to the first of the large basins mentioned above and then to the second and third basins in turn, the water being delivered to each basin from a point well below the surface of the water in the basin preceding it, to avoid taking in any of the oil which has floated to the surface. The recovered oil is heated and sold for road oil.

Cost of Concrete Lining Justified

It is believed that the cost of the two-and-a-half-inch concrete lining in the separating basins is amply justified as insurance against seepage and damage to the walls of the basins through the burrowing of gophers. The concrete lining offers the further advantage of presenting a firm surface for the periodical cleaning which is necessary for efficient separation. This plant is designed to handle 13,500 bbls. of water per day, and when working at its rated capacity, 10 days elapse from the time the oily fluid enters the plant until the oil-free water is discharged. Daily samples of the effluent are taken and subjected to laboratory tests in order to maintain a very careful check on the performance of the plant.

Nearly 20 miles of vitrified clay pipe lines is required to convey the waste water to the separating plant and 3 miles of vitrified clay pipe line to conduct the effluent to the Orange County outfall sewer through which it passes for a distance of 16 miles to the ocean. The water flows through the entire system by gravity, except for a short section at the easterly end of the Richfield lateral, which is a cast-iron pumping line. The completed system cost the member oil companies more than $190,000 and the annual operating cost is approximately $20,000.

The separating plant of Santa Fe Springs Waste Water Disposal Co. is on Woods avenue, near the northwesterly edge of the Santa Fe Springs Field, and having been more recently constructed than the others naturally includes innovations in design which tend to promote greater efficiency of operation. The engineering committee charged with the design and construction of this system, made a careful examination of the facilities of its two predecessors as well as the plants of individual operators. Separators at refineries of the larger oil companies were studied, although some doubt was expressed as to whether refinery methods of separation could be applied satisfactorily to field waters.

Problems Fundamentally Alike

The prevailing idea seemed to be that the large quantities of acids and neutralizing agents and large volumes of cooling water in refinery wastes made the two problems quite different. This is true to some extent, but fundamen-

(Continued on Page 242)

MAP SHOWS LOCATION OF WILDCAT OPERATIONS IN CALIFORNIA DURING 1929

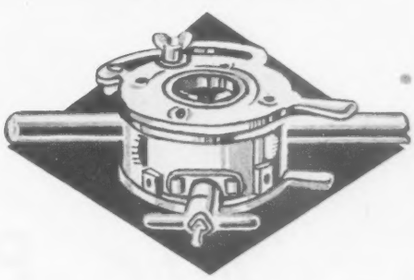
Martin Van Couvering, petroleum engineer, Los Angeles.

your nearest.... JARECKI STORE

LOGICAL HEADQUARTERS for your Oil Field Needs

There are many reasons why a steadily increasing number of careful buyers regard the stocks at the nearest JARECKI store as their own stocks, to be requisitioned when and as needed. Not only do they find the stocks unusually comprehensive and carefully maintained but, most important, they realize that every item that bears the JARECKI sanction is soundly designed, ruggedly made and honestly inspected.... The JARECKI sign on an oil field store is an indication of decidedly modern equipment, coupled with good old-fashioned standards of service.

JARECKI Screw Plate and Pipe Cutter (figure 701). Equipped with adjustable, self-centering dies and guides. Cuts threads over or under size. Simple in operation, sturdy in construction.



Branch Stores at all important places in the Oil Country

Jarecki MANUFACTURING COMPANY

Home Office and Factory—Erie, Pa., U. S. A.

General Office—St. Louis, Mo. *District Offices*—Pittsburgh, Pa.; El Dorado, Kan.; Tulsa, Okla.; Newark, Ohio; Eastland and Dallas, Texas; Lawrenceville, Ill.

When YELLOW GOLD

. . . . the PROSPECTOR'S KIT OF TOOLS *changed to*

Changed to BLACK *in* CALIFORNIA

a GUIBERSON CATALOG

GUIBERSON

BETTER BE SAFE THAN SORRY

MEN PROMINENT IN THE CALIFORNIA OIL INDUSTRY

K. R. KINGSBURY
President Standard Oil Co. of California
San Francisco

V. M. KOROBOVKIN
Director Amtorg Trading Corp.,
U. S. S. R.

W. L. STEWART
President, Union Oil Co. of California

—Boye Photo.
C. A. WHEELER
Robinson Orifice Fitting Co., Los Angeles

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T. SUTTER
Baker Oil Tools, Inc., Los Angeles

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L. H. LaMONTAGUE
Engineering Research & Equip. Co.
Los Angeles

LEE B. METTLER
Lee B. Mettler Co., Los Angeles

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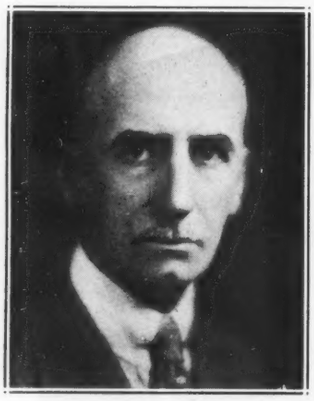
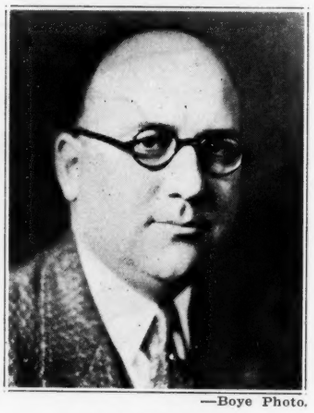
L. H. BRENDEL
Neilan, Schumacher & Co., Los Angeles



CHARLES A. SON
Los Angeles

—Boye Photo.
FRANK CHAMPION
Champion & Barber, Los Angeles

—Boye Photo.
J. T. O'LEARY
Manager Chapman Valve Mfg. Co.



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F. M. BEESON
District Sales Manager, Graver Corp.

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R. Y. HANLON
National Lumber Manufacturers Assn.,
San Francisco

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W. N. DROWN
Sales Manager, Universal Oil Products
Co., Los Angeles

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H. D. AINSLIE
MacClatchie Mfg. Co., Los Angeles

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JOHN GRANT
Grant Oil Tool Co., Los Angeles

EXPERIENCE

"There is no substitute for **EXPERIENCE"**

BORIUM

Mounted Bits

...e been making more hole—consist-...ly—than any other insert material, since the advent of Diamond Substitutes. Experience has taught the driller that.

It has been wisely said that "Experience is a dear teacher"—so why not profit by the experience of others and use Borium on your hard-formation bits from now on.

"There is no Substitute for BORIUM."

Write for the booklet describing . . . BORIUM. It will pay you!

● *The Borium mounted bit pictured here made 27 feet of hole, where other hard-formation bits made but two feet—in the same formation, below the 5,000-foot level.*

STOODY COMPANY

Manufacturers of **Welding Rod Alloy Steels** Equipment

WHITTIER CALIFORNIA

MEN PROMINENT IN THE CALIFORNIA OIL INDUSTRY

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E. L. DECKER
Martin-Decker Corp., Los Angeles.

—Boye Photo.
MARK D. WOOLERY
Manager Ohio Oil Co., Los Angeles.

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BERT A. CLEVELAND
Regan Forge & Engineering Co.

GEORGE S. TOMASCHEVSKY
Interpreter and Representative of Amtorg Trading Corp.

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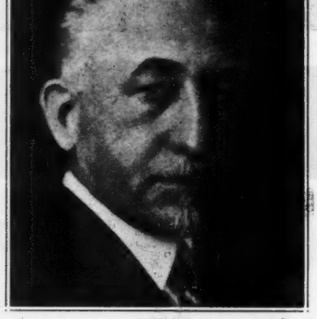
D. M. HILL
District Manager, Foxboro Co.



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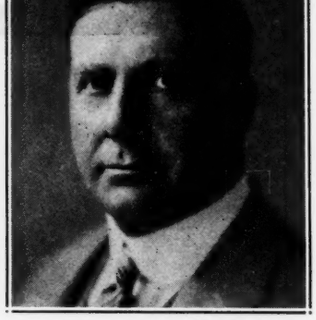
H. R. MACMILLAN
President Herbert R. Macmillan Co.



P. H. WILKINSON
President, Wilkinson Controller Co.

FRANK A. MORGAN
Chief Geologist, Rio Grande Oil Co.

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J. W. LUCAS
Vice President, Southwest Welding & Machine Co., Los Angeles.

—Boye Photo.
JOSEPH JENSEN
Chief Petroleum Engineer, Associated Oil Co.

—Boye Photo.
ANDREW LUCAS
President, Southwest Welding & Machine Co., Los Angeles.

B. P. BOOTS
Production Engineer, De Bataafsche Petroleum Maatschappij

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H. H. (DICK) CLARK
Baash-Ross Tool Co., Los Angeles.

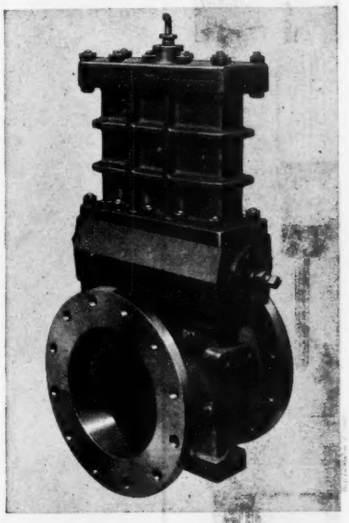
BOYD GUTHRIE
Petroleum Chemist, U. S. Bureau of Mines.

—Boye Photo.
DEWEY BARBER
Champion & Barber, Los Angeles.

HOW THE MODERN ORIFICE FITTING CUTS PIPELINE MAINTENANCE COSTS

. . . . . and provides accurate metering

When Robinson engineers introduced the first Robinson Orifice Fitting, some five years ago, they brought to the oil and gas world the first practical solution for one of the industry's biggest problems . . . . the urgent need for a greatly simplified and less expensive method of changing orifice meter plates, as well as housing the equipment compactly. Although the first fitting was developed to a high degree of perfection before it was ever placed on the market, Robinson Orifice Fittings have since been so continually improved that today they represent the utmost in efficiency and economy.



The Complete Robinson Orifice Fitting. Ready for installation. Note its compactness and simplicity.

THOUSANDS OF ROBINSONS IN USE!

That they produce very definite advantages for pipe line owners is convincingly shown by the fact that nearly 12,000 are now in use and all of them giving excellent service on every kind of pipeline where orifice measurement is necessary.

Paramount among Robinson features is the elimination of the cumbersome bypass with the heavy expense attendant to that method of metering. Equally important advantages are found in the ease and economy with which the fitting can be installed and the plate removed for frequent inspection or micrometer checking of the orifice . . . or replaced. All of these operations are accomplished without interruption of the gas-flow.

EASE OF INSTALLATION

Just compare the installation of a Robinson Fitting and one of the old-style setups. The latter was usually hauled to the location on a two-ton truck . . . . accompanied by three or four men with pipe and fittings. A meter man made a separate trip to install the gauge. In short, a six-inch meter installation required the services of two trucks, a foreman, meter man, truck driver and three laborers.

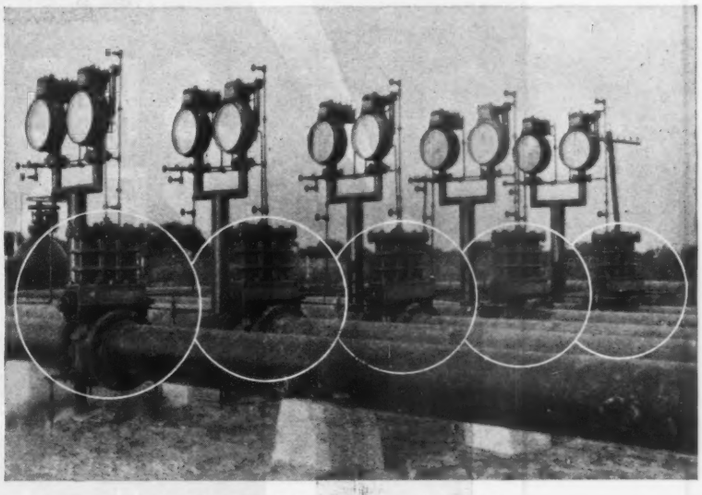
Here's the Robinson method. One man hauls the complete setup in a small car and installs it, without help, in a very short time! Quite a difference in cost . . . . and the larger the setup the greater the saving.

OTHER ROBINSON ADVANTAGES

These two economies alone make it virtually indispensable for any orifice installation that measures gas, oil or water . . . . and it has many additional features that all contribute to better service and lower maintenance cost. It effects big savings in the cost of materials, for example, because it eliminates the valves, tees, ells, couplings, flanges, pipe, etc., used on the old type setups . . . . it simplifies and speeds up changes because the plate does not have to be removed from between two flanges (3 to 15 minutes will do the job.)

ACCURATE METERING ASSURED

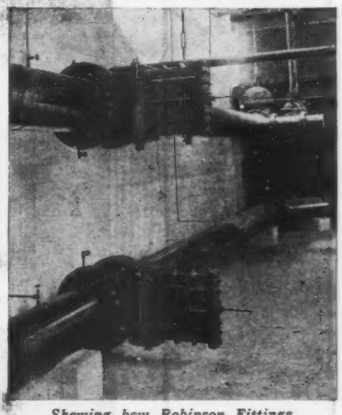
Errors in measurement are prevented because the orifice is **always centered** . . . . and because no gas or oil can leak by the fitting but must all pass through the orifice to be correctly measured. There is no by-pass valve to stick open—nothing to get out of order. Even plate changing is done with little or no gas loss, no hazard and no waste.



Ten inch Robinson Fittings installed by The Southern Gas Co., San Antonio, Texas.

The entire Robinson Orifice Fitting occupies no more space than an ordinary gate valve or pressure gauge . . . and it can be mounted in almost any position. Taking them all in all, Robinson advantages combine to produce the most accurate of metering at the lowest cost . . . . no matter whether you figure it by the year, by the number of changes or by initial and maintenance costs on individual installations!

Robinson Orifice Fittings are made in sizes ranging from 2" to 20" to function at working pressures of from 100 to 500 pounds. An illustrated catalog, describing in great detail the various working parts and their functions, the easy installation and efficient operation of Robinson Orifice Fittings will be sent to you without charge, on request. Simply write to the Main Office at Los Angeles, or any one of the following distributors: The Foxboro Company, Dallas, Texas, and Tulsa, Oklahoma, or Westcott & Greis, Inc., Dallas, Texas, and Tulsa, Oklahoma; English distributor, Walker, Crosweller and Company, 54-58 Queen Elizabeth Street, London, S.E. No. 1.

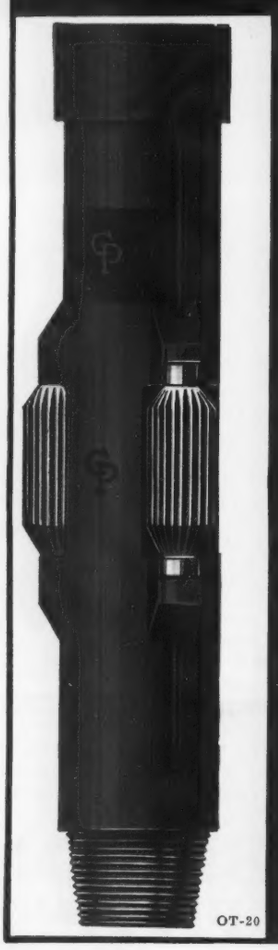


Showing how Robinson Fittings can be mounted in almost any position—and in very little space.

ROBINSON ORIFICE FITTING CO.,
1435 Sante Fe Avenue, LOS ANGELES, CALIF.

NEW !

SPECIAL REAMERS



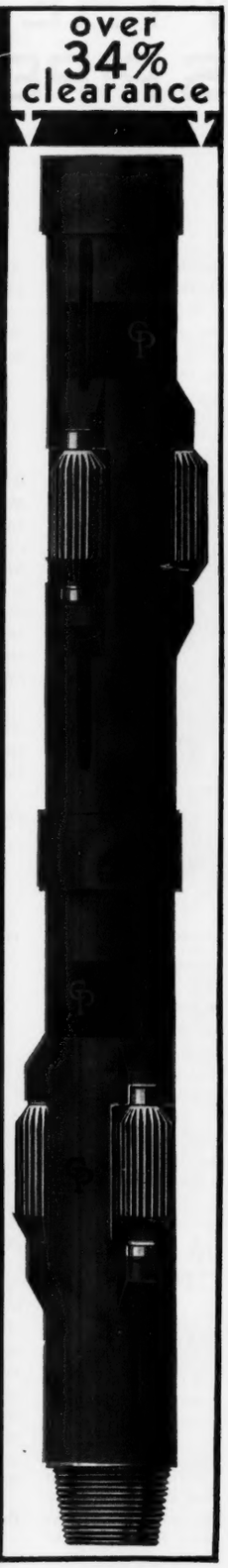
Ample shoulder for elevator and overshot.

Uses highly efficient patented CP Reamer Cutters which are easily and quickly replaceable without removing reamer from drill pipe.

One-piece bodies of solid manganese steel, assuring STRENGTH, RIGIDITY and DURABILITY.

All wearing parts removable.

Send for complete catalog No. 930 illustrating and describing CP Tucone Rock Bits and Special Reamers.



CHICAGO PNEUMATIC TOOL COMPANY

OIL TOOL DIVISION OFFICES

6 East 44th St., NEW YORK

655 Santa Fe Ave.
LOS ANGELES

1 West 16th St.
OKLAHOMA CITY

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SAM S. CROWLEY
Eng. Dept. Edwards Wire Rope Co., San Francisco

V. H. WILHELM
Chief Petroleum Engineer, The Texas Company

EARL G. GAYLORD
Chief Petroleum Engineer, Standard Oil Co. of California, San Francisco

J. A. CRAWFORD
President Republic Supply Co., Los Angeles

C. M. FULLER
President Richfield Oil Co. of California, Los Angeles

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R. F. SPRINGER
Allen-Oliver Co., Los Angeles

FRANK MASON
Superintendent Shaffer Tool Works, Los Angeles

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Jones-McLaughlin, Inc., Los Angeles

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President Coast Machinery Corp., Los Angeles

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Vice President and General Manager, The Republic Supply Co., Los Angeles

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J. P. Ratigan & Co., Los Angeles

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Sales Manager, Crane Co., Los Angeles

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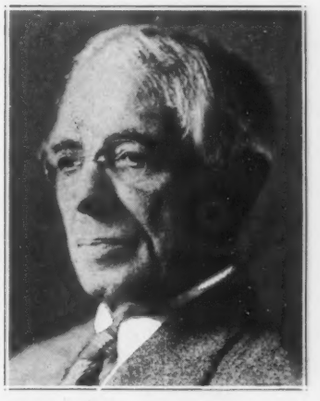
Chicago Pneumatic Tool Co., Los Angeles

L. S. HAMER
President, Hamer Oil Tool Co., Ltd.



B. F. BERNSEN
Lucey Manufacturing Corp.

MEN PROMINENT IN THE CALIFORNIA OIL INDUSTRY

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Merco-Nordstrom Valve Co., San Francisco

WILLIAM REINHARDT
Vice President Shell Oil Co., Los Angeles

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E. B. Wiggins Oil Tool Co., Los Angeles

R. C. SMITH
Manager of the Los Nietos Branch of the H. C. Smith Mfg. Co.

CYRUS BELL
Los Angeles

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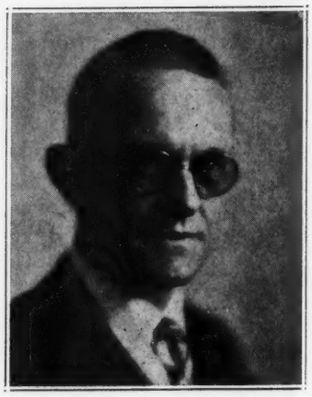
C. A. TAYLOR
Vice President, Jordan & Taylor, Los Angeles



G. W. BOWLUS
General Petroleum Corp. of California, Los Angeles

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PETER FLUOR
Fluor Construction Co., Los Angeles

J. A. BROWN
President General Petroleum Corp. of California, Los Angeles

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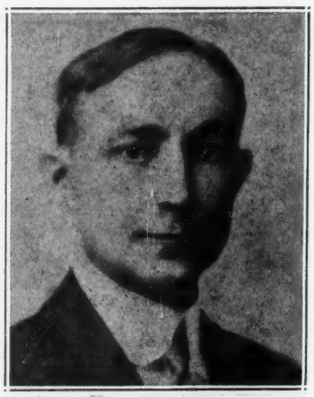
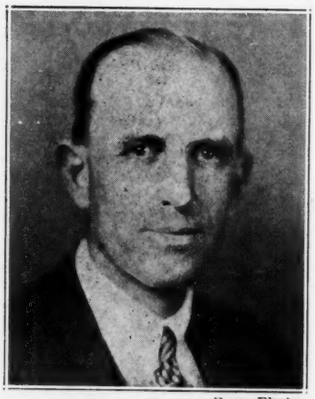
H. B. KETCHUM
Vice President Ketchum Bros., Inc., Los Angeles



G. C. GESTER
Chief Geologist, Standard Oil Co. of California, San Francisco



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District Sales Manager, Guiberson Corp.

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Neilan-Schumacher & Co., Los Angeles

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Robinson Orifice Fitting Co., Los Angeles

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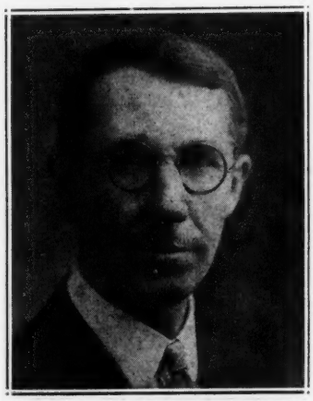
Elliott Core Drilling Co., Los Angeles

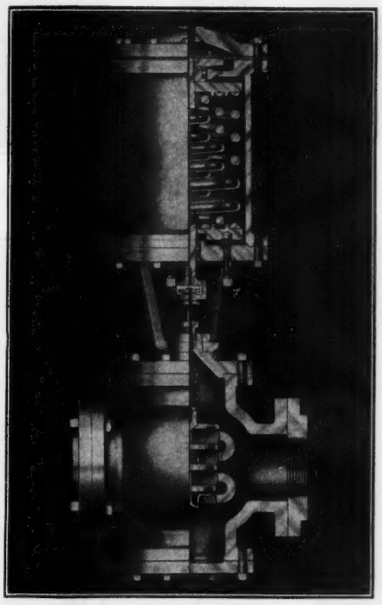


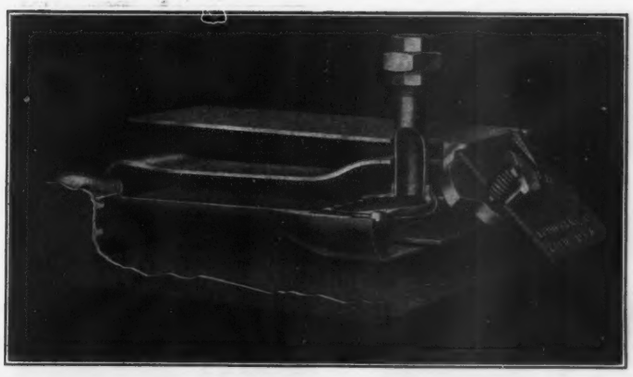
THOMAS COX
Oakland, Calif.

2 PIONEERS

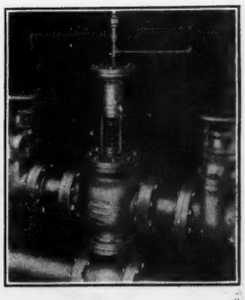
working together for better Power Plant

PERFORMANCE!





WILGUS GAS FUEL *Regulators*



CHECK the developments which replaced the sluggish, unreliable weight-loaded regulators of twenty years ago with the sensitive, quick-acting and dependable modern regulator—making automatic pressure control standard practice in hundreds of processes—and most of the major advances will be found to have been pioneered by WILGUS regulators:

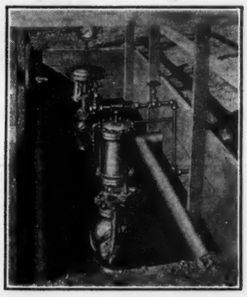
First regulator with diaphragm pressure opposed by springs instead of weights.

First regulator to float moving parts on frictionless ball bearings.

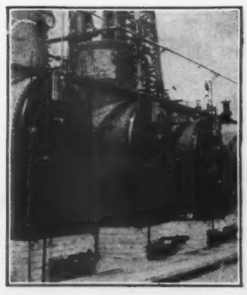
First gas fuel regulator with balanced four-port valve.

First regulator with multiple springs for high pressure operation.

First pilot-operated regulator holding maximum variation under one pound.



N.G.E. GAS BURNERS *"Type A"*



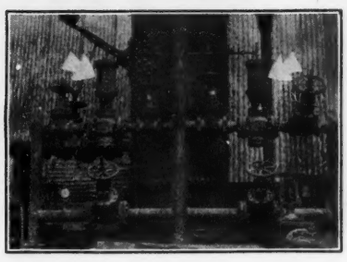
PLANT efficiency requires fuel control in proportion to load—and economical use of all the heat value of the fuel. WILGUS Gas Fuel Regulators insure the first—N.G.E. Burners *Type A* provide the second.

The first gas burner manufactured in the West based on correct principles was a product of N. G. E. engineers. *Type A* burners are the result of nine years of intensive development—outgrowth of a half-million horsepower of burners installed under widely varying operating conditions.

A soft, clear, flameless heat sweeps the entire combustion area without direct impingement—furnace walls radiate heat directly to the boiler—many plants report increased capacity as high as 75 per cent brought about by installation of *Type A* burners.

NATURAL GAS EQUIPMENT, INC.

Los Angeles *San Francisco* *Tulsa, Oklahoma*



Convertibility from one service to another is a Wilgus advantage—gas fuel changed to back pressure regulators, shown here, by turning valve body over

N. G. E. Burners Type A in the 150 b. p. horizontal return tubular boilers of one of the largest gasoline companies

Request your copy of *Pioneers in Gas Pressure Regulation* and 21 *Gas Burner Problems and Their Solution* . . . .

*Name*_____ *Company*_____

*Address*_____

MEN PROMINENT IN THE CALIFORNIA OIL INDUSTRY

—Boye Photo.
A. M. STRONG
Strong Oil Tool Co., Los Angeles

HENRY WEST
Shell Oil Co., Los Angeles

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J. J. FERLIN
California Mfg. & Eng. Co., Los Angeles

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E. L. MATHY
Victor Welding & Equipment Co., San Francisco

F. W. LAKE
Supt. of Production, Southern Division, Union Oil Co. of Calif., Santa Fe Springs

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S. S. GODFREY
Brown Instrument Co., Los Angeles

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L. G. TANDBERG
Wagner Electric Corp., Los Angeles

EARL GILMORE
President Gilmore Oil Co., Los Angeles

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O. G. OUARRE
General Paint Co., Los Angeles

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E. S. KETCHUM
Secretary-Treasurer, Ketchum Bros., Inc.

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E. N. GREENLEAF
Allis-Chalmers Mfg. Co., Los Angeles

F. C. RIPLEY
Manager Chanslor-Canfield Midway Oil Co., Los Angeles

E. W. GOESER
Vice President and Production Manager, Emsco Derrick & Equip. Co., Los Angeles

PARKER B. ABBOTT
General Sales Manager, Edwards Wire Rope Co., San Francisco

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WILLIAM F. HUMPHREY
President Associated Oil Co., San Francisco

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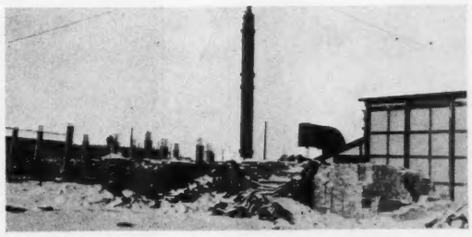
A. V. COX
Baash-Ross Tool Co., Los Angeles



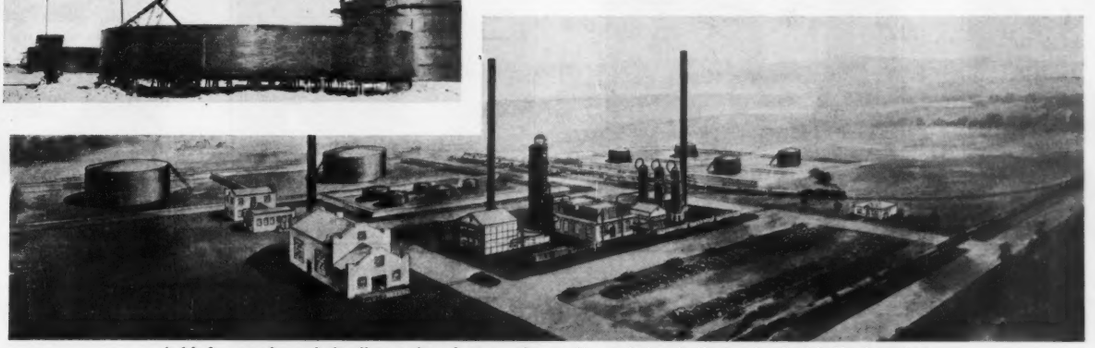
CERTAINTY

Step by step this complete refinery at Laurel, Montana, is taking shape. Construction was started in the middle of winter, but even in the face of the sub-zero weather in this part of the country, the schedule has been maintained.

Smith Engineering Company always accomplish the most difficult tasks.

With their complete organization, experience, knowledge and resources, they can design and build your new plant, whether a single unit or a complete refinery, with the certainty that it will meet your specific requirements.

A group of progress photographs, showing construction on January 18.



A birds-eye view of the first units of a complete refinery being built by the Smith Engineering Company for the Laurel Oil and Refining Co., at Laurel, Montana.

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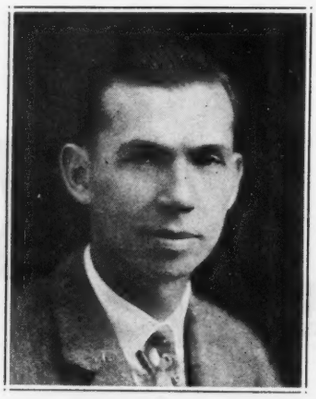
McEverlast, Inc., Los Angeles.

ROBERT R. ROBINSON
Mechanical Engineer, Los Angeles.



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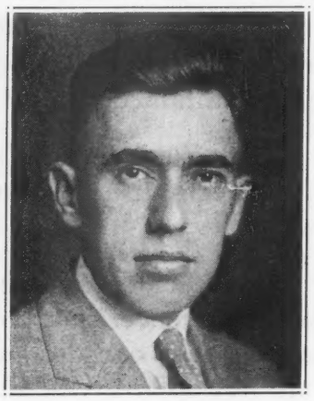
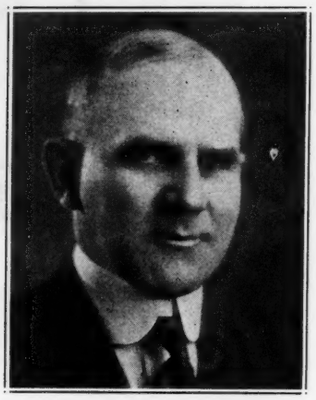
FRANK R. SEAVER
General Manager, Doheny Stone Drill Co., Los Angeles.

W. W. ORCUTT
Vice President, Union Oil Co. of California, Los Angeles.



G. W. CAMBLIN
District Manager, Wm. S. Barnickel & Co.

N. H. ANDERSON
The Petroleum Co., Long Beach, Calif.

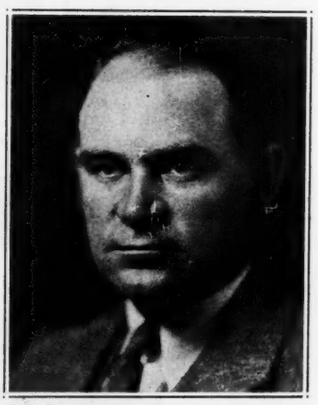


FRED S. SHOUP
Southern Departmental Manager, Associated Oil Co., San Francisco.

W. H. LAURY
President and General Manager, Universal Rod & Equipment Co.

EDGAR H. WILSON
Los Angeles.

J. B. KISSINGER
Assistant Treasurer, Oil Well Supply Co., Los Angeles.



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FRED A. WORTHEY
Axelson Aircraft Engine Co., Los Angeles.

DESAIX B. MYERS
Chief Geologist, Union Oil Co. of California, Los Angeles.

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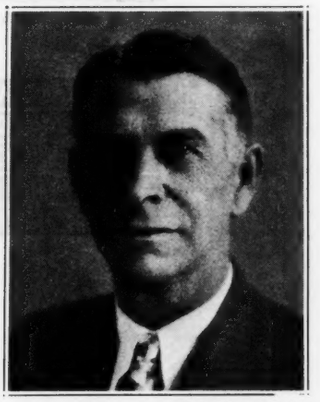
WILLIAM REINHARDT
Vice President, Shell Oil Corp., Los Angeles.

H. H. HALL
Chief Engineer, Standard Oil Co. of California, San Francisco.



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Manager, Hughes Tool Company, Los Angeles.

R. E. COLLOM
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Superintendent Coast Division, Union Oil Co. of California, Orcutt, Calif.

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District Sales Manager, Oil Well Supply Co., Los Angeles.

HALLAN N. MARSH
Production engineer, General Petroleum Corporation of California, Los Angeles.

R. O. CATLAND
Hughes Tool Company, Los Angeles.

R. C. WHEELER
Manager, Gas Department, General Petroleum Corp. of California, Los Angeles.

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RICHARD FLORIAN
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Elliott Core Drill Company, Los Angeles.

C. M. NICKERSON
Petroleum Engineer, Los Angeles.

WENDELL M. JONES
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O. C. FIELD
President, O. C. Field Gasoline Corp., Los Angeles.

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E. M. SMITH
Emsco Derrick & Equipment Co., Los Angeles.

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General Superintendent, Associated Oil Co., San Francisco.

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Vice President, The National Supply Co. of California, Torrance, Calif.

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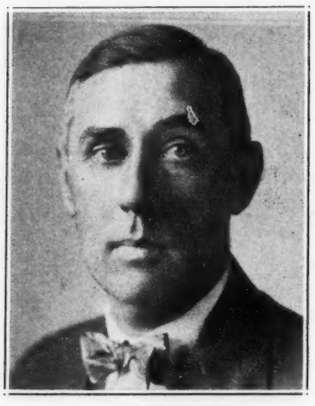
Martin-Decker Corp., Los Angeles.

NORVAL WHITE
Pacific Coast Representative, American Petroleum Institute, San Francisco.

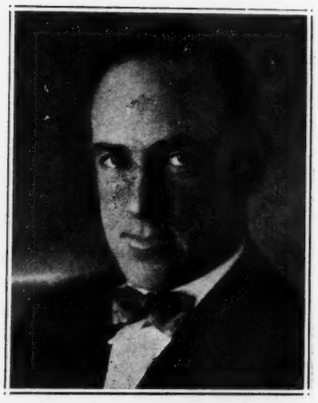
J. A. CRAWFORD
President, The Republic Supply Co. of California, Los Angeles.

W. E. DUNLAP
Director, Richfield Oil Co. of California, Manager Production Department.

J. P. COONEY
District Manager, South Chester Tube Co., Los Angeles.



C. C. SCHARPENBERG
Chief Engineer, Producing Department, Standard Oil Co. of California.



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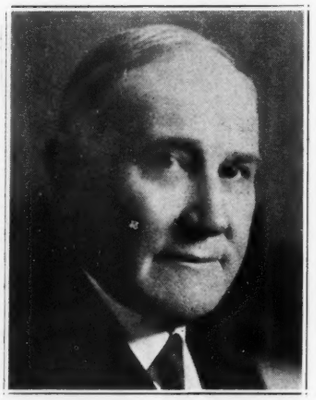
L. L. BRUNDRED
Petroleum Engineer, Los Angeles.

S. A. GUIBERSON, JR.
Guiberson Oil & Investment Co., Los Angeles.



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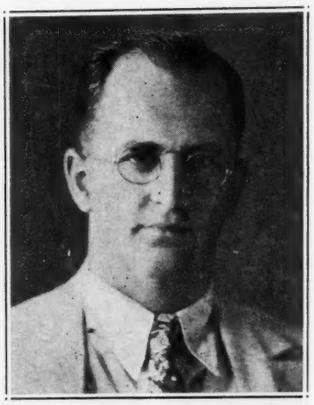
L. P. ST. CLAIR
Executive Vice President, Union Oil Co. of California, Los Angeles.



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Specialty Oil Tool Co., Los Angeles.

L. E. PORTER
Chief Geologist, Richfield Oil Co. of California, Los Angeles.

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Kerotest Manufacturing Co., Los Angeles.

GEORGE F. GETTY
Los Angeles.

LEONARD E. VAUGHN
Byron Jackson Co., Los Angeles.

F. F. HILL
Manager Field Operations, Union Oil Co. of California, Los Angeles.

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Sales Manager, Goodrich Silvertown, Inc., Los Angeles.

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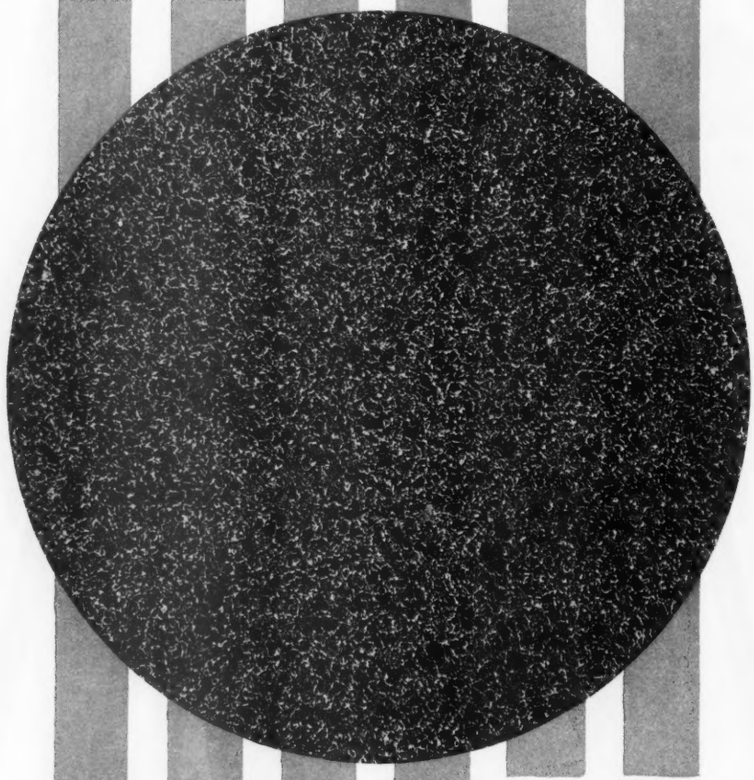

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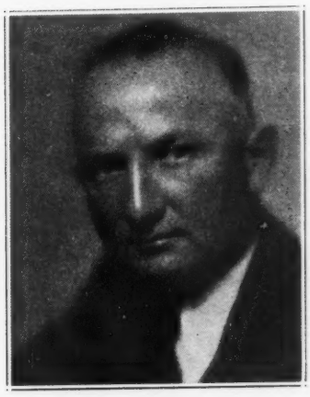

R. R. MORRIS
Vice President, The Oil Well Equipment Corp., Los Angeles

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Patterson-Ballagh Corp., Los Angeles

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General Manager, Producing Department Standard Oil Co. of California

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District Sales Manager, Haynes Stellite Co., Los Angeles

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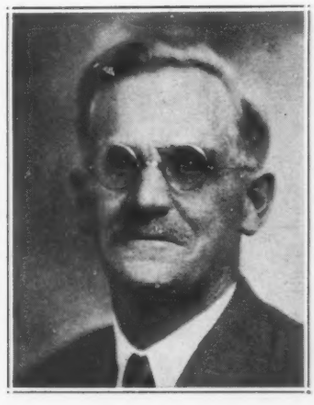
Vice President and Sales Director, Axelson Manufacturing Co., Los Angeles

F. CHAMPION
Southern Counties Gas Co. of California, Los Angeles

W. B. TOBIN
International Derrick & Equipment Co., Los Angeles



R. C. BAKER
President Baker Oil Tools, Inc., Huntington Park

MEN PROMINENT IN THE CALIFORNIA OIL INDUSTRY

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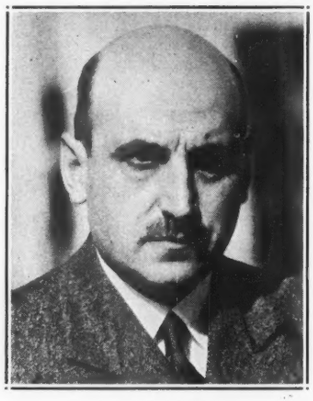
J. V. THOMAS
Natural Gas Equipment Co., Los Angeles



P. A. BEREJANOFF
Chief Engineer, Dept. of Drilling and Production, Technical Bureau, U.S.S.R.

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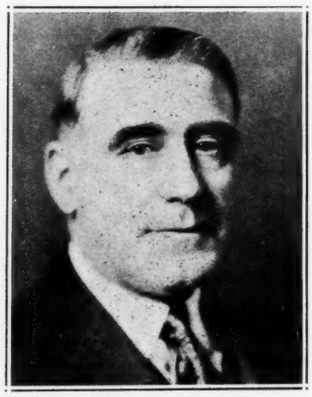
Z. G. KETCHUM
President and Sales Manager, Ketchum Bros., Inc., Los Angeles



JOHN McKEON
Italo Petroleum Corp., Los Angeles

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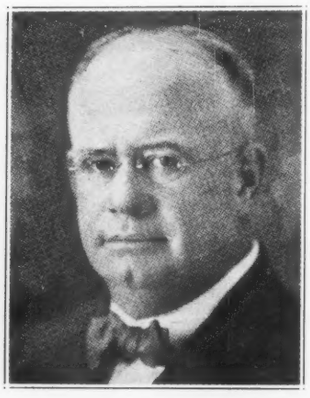
JOHN YERKES
Economy Pump & Tool Co., Los Angeles



R. A. BROOMFIELD
President and General Manager, Barnsdall Oil Co. of California, Los Angeles

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B. D. BALTHIS
Natural Gas Equipment Co., Los Angeles

C. P. BOWIE
Supervising Engineer, U. S. Bureau of Mines, San Francisco

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HUGH R. LAMBERTH
Fluor Construction Co., Los Angeles

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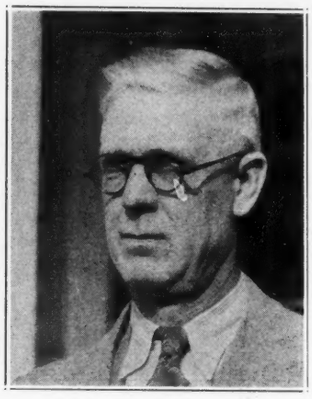
C. W. HARMON
Sales Manager Garlock Packing Co.,



C. W. KING
Division Superintendent Standard Oil Co. of California, Coalinga

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J. WRIGHT
Wieman-Kammerer & Wright, Los Angeles.

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A. R. FLOURNOY
Gardner-Denver Co., Los Angeles

C. E. OLMSTED
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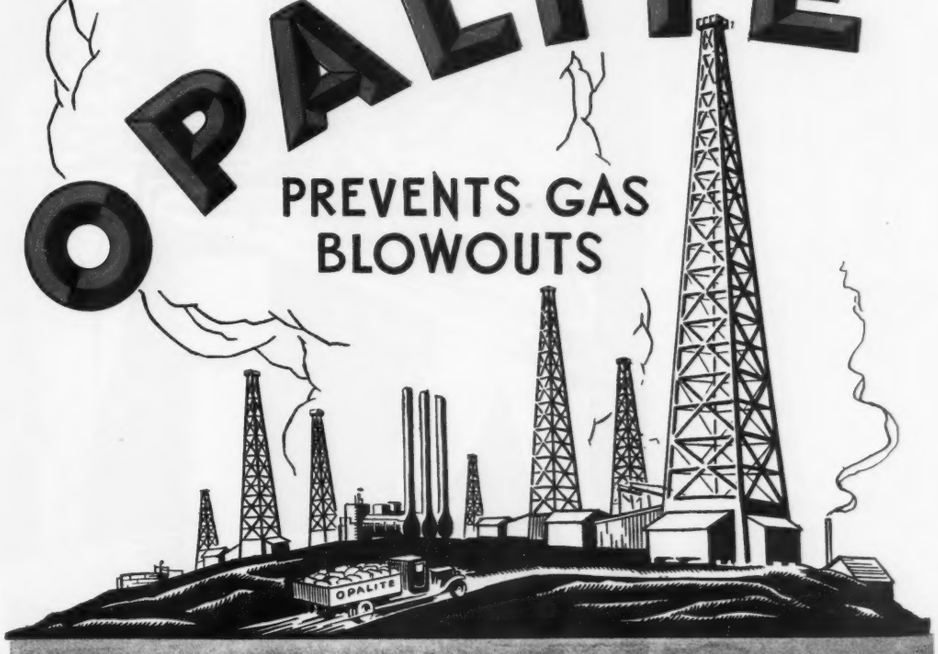

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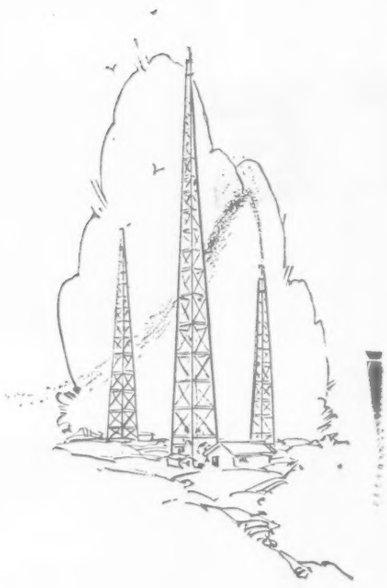

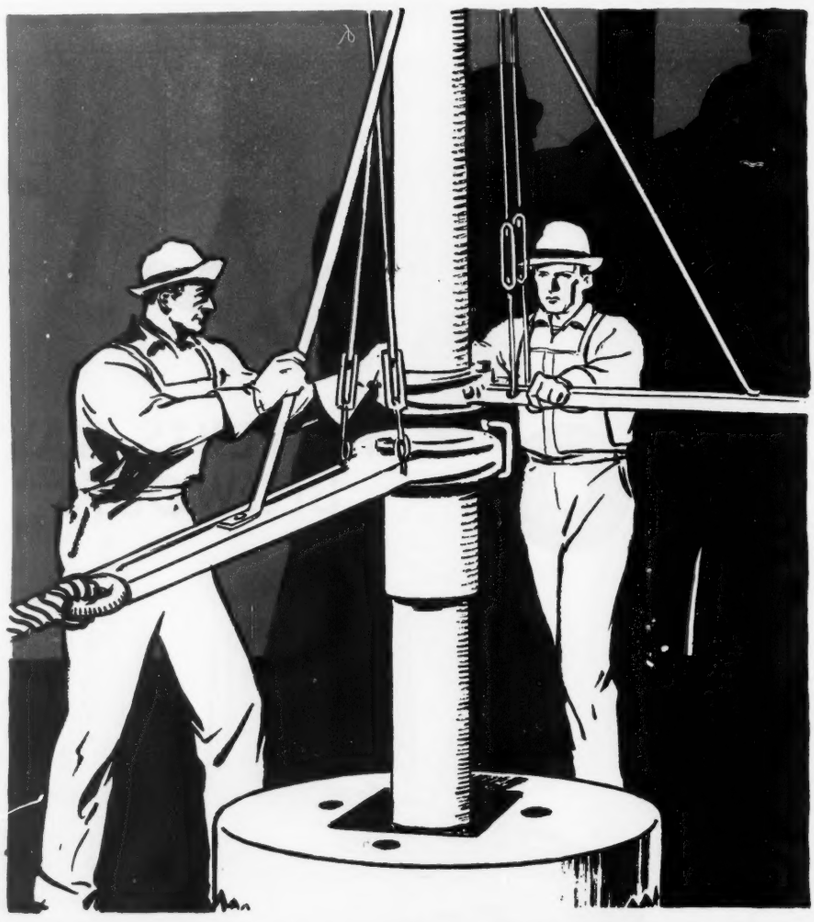

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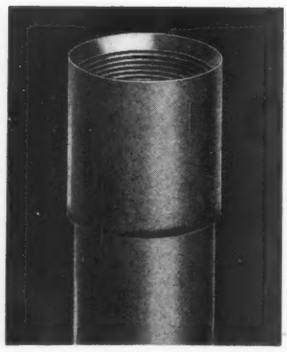

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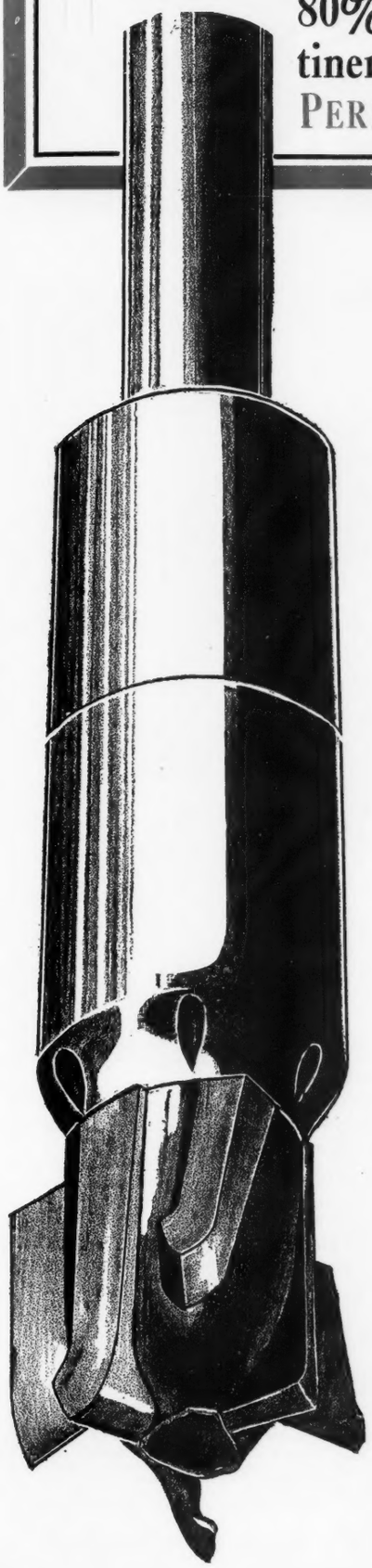

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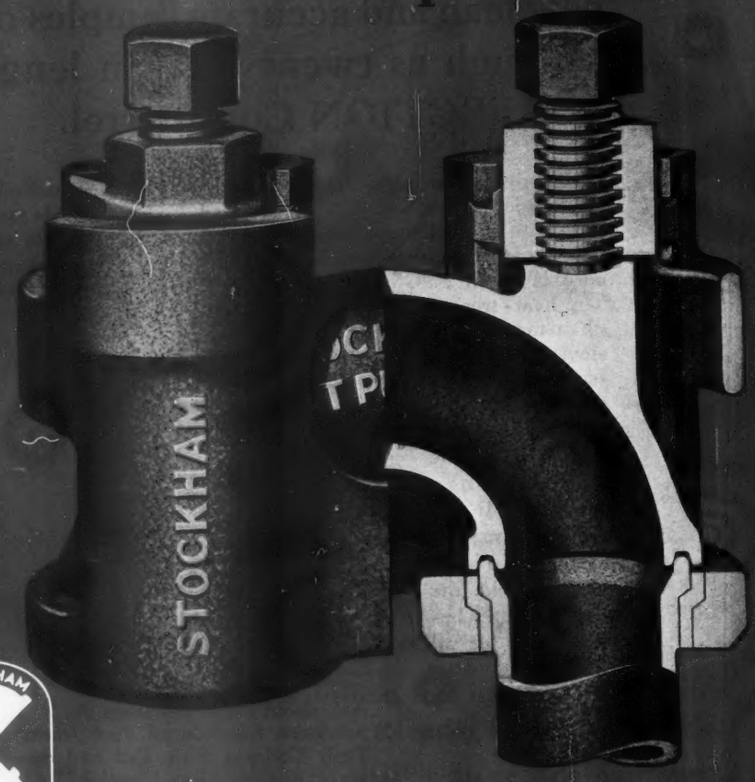
will cut cost of tube-still operation



STOCKHAM FITTINGS

The heavy toll of tube replacements because of rolling in boosts operating costs. When the Stockham Fantz-Type Return Bend is used, tubes are not rolled in. Dismantling for cleaning is easy without destroying a single tube—any one tube may easily be replaced without damaging adjacent tubes. Speedy inspection and replacement guarantee economy.

Communicate with our Petroleum Division to secure cost-cutting facts about the Stockham Fantz-Type Return Bend.

See us at the
OIL EQUIPMENT & ENGINEERING EXPOSITION
in Los Angeles March 16-23

STOCKHAM PIPE & FITTINGS COMPANY
BIRMINGHAM, ALABAMA

Patents applied for in the United States and in Argentina, Canada, Colombia, Dutch East Indies, England, France, Germany, Holland, India, Italy, Japan, Mexico, Persia, Peru, Poland, Rumania, Trinidad, Venezuela, Australia, Dutch West Indies and Cuba.

MEN PROMINENT IN THE CALIFORNIA OIL INDUSTRY

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G. B. LAUDERBACK

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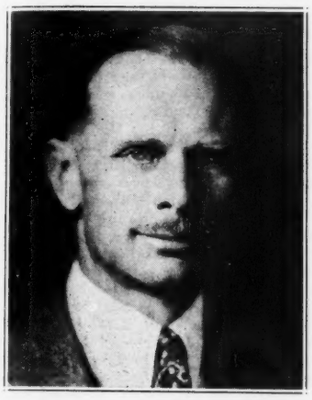

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H. E. HOFFER
Pacific Oil Tool Co., Los Angeles.

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J. W. MAC CLATCHIE
McClatchie Mfg. Co., Los Angeles.

H. C. SMITH
President, H. C. Smith Mfg. Co., Inc., Los Angeles.

I. B. FUNK
Engineering, Research & Equipment Co.

WIDE INTEREST SHOWN IN EQUIPMENT SHOW

(Continued from Page 49)

Welding," by W. R. Ost, engineer, Air Reduction Sales Co.

"Welding of Jigs, Fixtures and Machine Tools," by David Hall, engineer, Westinghouse Electric & Manufacturing Co.

"Haynes Stellite and Haystellite in the Oil Field," by J. J. Bruton, Linde Air Products.

Evening session, 7:30 p.m., assembly room, Shrine Auditorium. Sponsored by American Society for Steel Treating. James H. Spade, Ludlum Steel Co., chairman; Charles W. Lewis, Hughes Tool Co., secretary.

"Corrosives," by James H. Spade, Ludlum Steel Co.

"Factor of Safety in Design," by W. H. Clapp, professor of machine shop design, California Institute of Technology.

Wednesday, March 19

Afternoon session, 2 p.m., assembly room, Shrine Auditorium. Sponsored by American Institute of Mining and Metallurgical Engineers. Glenn D. Robertson, Cities Service Refining Co., chairman; Van Court Warren, consulting engineer, secretary.

"Use of Eotvos Torsion Balance," by H. W. Rose, George Steiner Co.

"Production Data to Establish Various Theories on Well Spacing," by Robert W. Phelps, consulting engineer.

"Drilling Mud Fluid Practice in Ventura Avenue Oil Field," by F. W. Hertet and E. W. Edson, Associated Oil Co.

Paper by W. R. Shimer, metallurgist, Bethlehem Steel Corp.

Evening session, 7:30 p.m., assembly room, Shrine Auditorium Sponsored by American Society of Mechanical Engineers. L. W. Vorhees, Union Oil Co., chairman; J. T. Holmes, Holmes & Sanborn Co., secretary.

"Mining and Manufacture of Asbestos for Use in the Oil Industry," by J. Z. Welsh and T. S. Tulien, of the oil-equipment division, Johns-Manville Co.

Thursday, March 20

Afternoon session, 2 p.m., assembly room, Shrine Auditorium. Sponsored by American Petroleum Institute, Production Division. Wendell Jones, Petroleum Equipment Co., chairman.

"Results of Experimental Drilling of Concrete Models," by F. F. Hill, Union Oil Co. of California.

"Subsurface Study of Kettleman Hills," by Stanley Herold.

"Progress in Straight Hole Drilling," by Alexander Anderson.

"Wharf Construction," by John Sweeney.

Evening session, 7:30 p.m. Sponsored by Southern California Meter Association.

"Findings and Disposition of Orifice Meter Charts for Office Records," by B. E. Scholtz and R. M. Brown, Union Oil Co.

"Uses for Liquefied Petroleum Gas in the Gas Industry," by F. A. Hough, Southern Counties Gas Co.

"Natural Gas Odorization in Southern California," by Guy Corfield, Los Angeles Gas & Electric Co.

"The Campbell Mist-B-Fier," by J. A. Campbell, The J. A. Campbell Co.

Friday, March 21

Afternoon session, 2 p.m., assembly room, Shrine Auditorium. Sponsored by American Petroleum Institute, Production Division. F. W. Lake, Union Oil Co., chairman.

"Kettleman Hills Operations." (Speaker to be announced later.)

"Counterbalancing Pumping Wells," by W. G. Corey and J. H. Wallace.

"Effect of Curtailment on Production," by Bruce H. Robinson.

Exhibits at the Show

Following is a list of the exhibitors:

Name—	Booth
Air Reduction Sales Co., New York City	272-274
Alco Oil Tool Co., Compton, Calif.	61
Allis, Louis, Co., Milwaukee, Wis.	241
Alloy Steel & Metals Co., Los Angeles, Calif.	124
American Hammered Piston Ring Co., Baltimore, Md.	311
American Iron & Machine Works Co., Oklahoma City, Okla.	246
American La France & Foamite Corp., Los Angeles, Calif.	138
American Pump Co., Los Angeles, Calif.	111
Alexander Anderson, Fullerton, Calif.	252
Appleton Electric Co., Los Angeles, Calif.	9
Automatic Lag Clutches, Inc., Los Angeles, Calif.	129
Axelson Manufacturing Co., Ltd., Los Angeles, Calif.	310-312
Baash-Ross Tool Co., Los Angeles, Calif.	234-269
Badgett Steam Lubricator Co., Chickasha, Okla.	305
Badenhausen Corp., Cornwells Heights, Pa.	265
Baker Oil Tools, Inc., Huntington Park, Calif.	103
Baldwin Chain & Manufacturing Co., Worcester, Mass.	47
Barber-Greene Co., Aurora, Ill.	249-251
Beck Oil Tool Co., Los Angeles, Calif.	19
Benjamin Electric Manufacturing Co., Chicago, Ill.	284
Bethlehem Steel Co., Inc., Bethlehem, Pa.	137-139
Bowen, S. R., Co., Huntington Beach, Calif.	279
Braun Corp., Los Angeles, Calif.	133
Bristol Co., Waterbury, Conn.	32
Burt Corp., Tulsa	41
Byron Jackson Co., Los Angeles, Calif.	286
California Columbian Steel Tank Co., Los Angeles, Calif.	294
California Machinery & Supply Co., Los Angeles, Calif.	8
California Redwood Association, San Francisco, Calif.	245
California Talc Co., Los Angeles, Calif.	273
Cameron Iron Works, Houston, Tex.	24

(Continued on next Page)

Campbell, J. A., Co., Long Beach, Calif. ..... 401 (outside)
Cash Pressure Reducing & Regulating Valve Co., Decatur, Ill. 3
Cavins Automatic Bailer Service, Long Beach, Calif. 302
Chain Belt Co., Milwaukee, Wis. 127
Chapman Valve Co., Indian Orchard, Mass. 94-96
Chicago Pneumatic Tool Co., New York City 43
Chicksan Oil Tool Co., Ltd., Fullerton, Calif. 65
Clark Brothers Co., Olean, N. Y. 249-251
Cleveland Brass Manufacturing Co., Cleveland, Ohio 3
Commercial Alloys Corp., San Francisco, Calif. 79
Commercial Iron Works, Los Angeles, Calif. 240
Concrete Machinery & Supply Co., Los Angeles, Calif. 237
Continental Equipment Co., Los Angeles, Calif. 112
Crane Co., Chicago, Ill. 2-31
Dale & Nielson, Los Angeles, Calif. 126
d'Este, Julian, Co., Boston, Mass. 17
Diamond Rubber Co., Akron, Ohio 278
Dixon Valve & Coupling Co., Philadelphia, Pa. 278
Doheny-Stone Drill Corp., Los Angeles ..... 93-403 (outside)
Ducommun Corp., Los Angeles, Calif. 135
Durametallic Corp., Kalamazoo, Mich. 17
Duro Engineering Co., Inc., Brea, Calif. 283
Eclipse Lubricator Co., Inc., Wichita Falls, Tex. 95
Elder, Andrew C., Los Angeles, Calif. 17
Electric Steel & Manufacturing Co., Los Angeles, Calif. 336-338
Elliott Core Drilling Co., Los Angeles, Calif. 44
Fluid Packed Pump Co., Los Nietos, Calif. 70
Fluor Corp., Ltd., Los Angeles, Calif. 99
Foster Valve Co., Torrance, Calif. 21
Foster Wheeler Corp., Los Angeles, Calif. 4-6
Foxboro Co., Inc., Los Angeles, Calif. 97
France Packing Co., Los Angeles, Calif. 1
Fuller Machine & Forge Works, Norwalk, Calif. 109
Garlock Packing Co., Palmyra, N. Y. 47
General Electric Co., Schenectady, N. Y. 285
Goodall Semi-Metallic Hose & Manufacturing Co., Philadelphia, Pa. 278
Grant Oil Tool Co., Los Angeles, Calif. 5
Graton & Knight Co., Worcester, Mass. 278
Gray Tool Co., Houston, Tex. 36
Great Western Cordage Co., Orange, Calif. 22
Greenwood, D. H., Corp., Los Angeles, Calif. 36
Guiberson Corp., Los Angeles, Calif. 98
Hamer Oil Tool Co., Ltd., Long Beach, Calif. 280
Haynes Stellite Co., Los Angeles, Calif. 39
Hercules Motors Corp., Canton, Ohio 330
Hickey, Frank T., Co., Los Angeles, Calif. 266
Hillman-Kelley, Inc., Los Angeles, Calif. 287
Hopper Machine Works, Bakersfield, Calif. 60
Hughes Tool Co., Los Angeles, Calif. 38-69
Hydraulic Press Manufacturing Co., Mt. Gilead, Ohio 20
Johnson, Jack, Los Angeles, Calif. 236
Jones Lyman & Co., Los Angeles, Calif. 3
Jones & Laughlin Steel Co., Pittsburgh, Pa. 234-269
Jorgensen, Earle M., Co., Los Angeles, Calif. 141
Kammerdirer, J. A., Los Angeles, Calif. 12
Kerotest Manufacturing Co., Pittsburgh, Pa. 108
Ketchum Brothers, Los Angeles, Calif. 307
Harman Pacific Co., Los Angeles, Calif. 301
Kropp Forge Co., Chicago, Ill. 22
Leland Brothers Co., Inc., Los Angeles, Calif. 42
Leeds & Northrup Co., Philadelphia, Pa. 244
Lincoln Electric Co., Cleveland, Ohio 282
Linde Air Products Co., New York City 281
Link Belt Co., Chicago, Ill. 81
Liquidometer Corp., Los Angeles, Calif. 255
Los Angeles Steel Casting Co., Los Angeles, Calif. 253
Lufkin Foundry & Machine Co., Lufkin, Tex. 33-35
Lynch, A. J., & Co., Los Angeles, Calif. 271
MacClatchie Manufacturing Co., Compton, Calif. 101
Manzel Brothers, Buffalo, N. Y. 128
Marshall Heater Co., Dayton, Ohio 17
Martin-Decker Corp., Long Beach, Calif. 72
Masterson, Joseph A., & Co., Los Angeles, Calif. 14
Materials, Inc., Los Angeles, Calif. 92
McEvoy Screen Pipe Co., Los Angeles, Calif. 298-300
McLaughlin, R. P., Los Angeles, Calif. 239
Meyler, R. G., Corp., Los Angeles, Calif. 265
Midwest Piping & Supply Co., St. Louis, Mo. 71
Miller, E. E., Fullerton, Calif. 78
Mine Safety Appliance Co., Pittsburgh, Pa. 123
Moran Flexible Steam Joint Co., Louisville, Ky. 36
Munger, Elwood J., Los Angeles, Calif. 239
Natural Gas Equipment Co., Los Angeles, Calif. 73
Naylor Pipe Co., Chicago, Ill. 135
Neilan, Schumacher & Co., Los Angeles, Calif. 100
Nitrose Co., Peoria, Ill. .....
O.C.S. Manufacturing Co., Coffeyville, Kans. 287
Oil and Gas Journal, The, Tulsa 143
Oilfields Service Co., Los Angeles, Calif. 254
Okonite Co., Passaic, N. J. 3
Pacific Abrasive Supply Co., Los Angeles, Calif. 344
Pacific Clay Products Co., Los Angeles, Calif. 265
Pacific Copper & Brass Co., Los Angeles, Calif. 267
Pacific Gear & Tool Works, Inc., Los Angeles, Calif. 18
Paragon Manufacturing Co., Los Angeles, Calif. 17
Patterson Ballagh Corp., Los Angeles, Calif. 247
Petroleum Equipment Co., Los Angeles, Calif. 18-20-22-24-47-49
Plibrico Jointless Firebrick Co., Chicago, Ill. .....
Powell, William, Co., Cincinnati, Ohio 131
Ratigan, J. P., Los Angeles, Calif. 315
Reed Roller Bit Co., Houston, Tex. 75
Regan Forge & Engineering Co., San Pedro, Calif. 66
Rich Manufacturing Co., Los Angeles, Calif. 296
Rieber Instrument Corp., Los Angeles, Calif. 247
Robinson Orifice Fitting Co., Los Angeles, Calif. 48
Rodless Pump Co., Los Angeles, Calif. 67
Shaffer Tool Works, Brea, Calif. 76-107
Shand & Jurs Co., Berkeley, Calif. 51
Shrader Electric Co., Inc., Los Angeles, Calif. 270
Smith, H. C., Manufacturing Co., Los Nietos, Calif. 74
Snyder Foundry & Supply Co., Los Angeles, Calif. 11
Sonner Burner Co., Winfield, Kans. 16
Southwestern Engineering Corp., Los Angeles, Calif. 102
Spartan Steel Co., Compton, Calif. 110
Specialty Oil Tool Co., Los Angeles, Calif. 68
Spherical Oil Well Surveying Co., Ltd., Long Beach, Calif. 242
Stockham Pipe & Fittings Co., Birmingham, Ala. 268-299
Sterling Electric Motors, Inc., Los Angeles, Calif. 301
Stoody Co., Whittier, Calif. 90
Strand, N. A., & Co., Chicago, Ill. 232
Thackaberry, M. N., Los Angeles, Calif. 232
Thrift Corp., Houston, Tex. 106
Trimont Manufacturing Co., Inc., Roxbury, Mass. 37
Turco Products, Inc., Los Angeles, Calif. 15
Universal Engineering Co., Vernon, Calif. 80
Victor Welding Equipment Co., San Francisco, Calif. 121
W-K-M Co., Houston, Tex. 264-266-295
Warren & Bailey Co., Los Angeles, Calif. 130-132
Waukesha Motor Co., Waukesha, Wis. 277
West Coast Lumbermen's Association, Seattle, Wash. ..... 402 (outside)
Westcott & Greis, Inc., Los Angeles, Calif. 304
Western Enterprise Engine Co., Los Angeles, Calif. 313
Wieman-Kammerer-Wright Co., Inc., Hollydale, Calif. 74
Williams, J. H., & Co., Buffalo, N. Y. 10

ROCKY MOUNTAIN AREA

(Continued from Page 69)

small chunks. Samples seen by the writer did not contain any odor, but when rubbed between the fingers turned to a brownish cast and became satiny in appearance and feel. When heat was applied, it gave off an odor similar to sheep's wool. A match applied to it caused it to splutter and burn. It looks much like a residuum of black oil, but it was claimed samples had been analyzed and that it showed a very high content of ichthyol. The hole is bottomed in the Laramie formation and has cut several veins of coal.

Arapahoe County

The McDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-55, is bottomed at 5,090 feet and sidetracking the 6¼-inch at 4,300 feet, 310 feet below where the string parted several weeks ago.

Larimer County

The Continental Oil Co.'s No. 5 Scott, NE NW, Section 6-9n-68, Wellington Dome, is drilling at 3,035 feet. Art Deininger's No. 1 Rimbey, NE cor., Section 35-4n-70, is moving in materials and repairing rig to drill deeper from 354 feet. The Standard Oil Co. of Colorado's No. 1 Hertha, NW cor., Section 21-4n-69, is shut down at 2,820 feet.

Bent County

The Continental Oil Co.'s No. 1 Pipe Springs, NE cor. SE, Section 27-27-49, is drilling at 5,534 feet in gray lime with the 5⅜-inch at 5,514 feet. It was in sand at 5,504 feet.

Huerfano County

The Parker Club, Inc.'s No. 1 Fee, Section 4-28-68, joint with the Kinney-Coastal Oil Co., is resuming at 4,015 feet after pulling the 5⅜-inch to straightream the 6¼-inch through a shale break at 3,996-4,000 feet.

Fremont County

The Continental Oil Co.'s No. 2 Harding, NE SW, Section 21-18-70, for the account of the Canon Heights Oil Co., Orchard Park district, is drilling at 1,440 feet.

Las Animas County

The Helium Co.'s No. 3 Morris-Cowdry, SW cor. NW, Section 35-29-60, Model Dome, is running the 6⅝-inch casing at 1,078 feet.

Rio Blanco County

The White Eeagle Oil & Refining Co.'s No. 1-A Fordham, NW SW, Section 9-2s-96, Piceance Creek, is bottomed at 3,010 feet and underreaming the 8¼-inch at 3,000 feet, and the Texas Production Co.'s No. 1 Potter, NE SW, Section 30-2n-96, White River, is shut down at 5,868 feet.

Moffat County

Thomas McLaughlin's No. 1 Williams, NW SW, Section 2-3n-92, Fault area south of Iles Dome, has resumed at a total depth of 4,420 feet, in shale above the Sundance. The 4¾-inch was pulled to straightream to bottom. The Midwest Refining Co.'s No. 19-SD Parkinson, SW NE, Section 22-4n-92, Iles Dome, is bottomed at 2,612 feet and trying for a formation shutoff. It is through the Frontier. The Mountain Fuel Supply Co.'s No. 1 Wheeler, NW NW, Section 30-12n-100, Bartram Dome, has completed cellar, and its No. 1 Lasher, NE NE, Section 25-12n-101, cemented the 5⅝-inch at 1,750 feet. The Texas Production Co.'s No. 1 Berlin, SW NE, Section 19-12-100, is bottomed at 2,347 feet with the 6¼-inch at 2,315 feet. It is mudding between the 6¼-inch and the 8⅝-inch. The Midwest Refining Co.'s No. 24 Hannewalt, SE SE, Section 4-6n-92, Bell Rock, is drilling at 1,625 feet in shale. It cut a sand at 1,510-70 feet.

UTAH

The Carbon Dioxide & Chemical Co.'s No. 1, SE SW, Section 12-15s-11e, Farnham Dome, is drilling at 1,150 feet. This well is being drilled by interests affiliated with the Fulton Petroleum Co. in search of carbon dioxide gas with which to manufacture dry ice. The Utah Southern Oil Co.'s No. 1 State, SW SE, Section 26-21-23, Cisco district, is drilling at 410 feet. The General Petroleum Co., which was identified with Utah Southern in some of its operations in Utah, has sold its interests to Salt Lake people. The Midwest Refining Co.'s No. 31 Pary, SW SE, Section 14-39-1w, Kane County, for the account of the Utah Oil Refining Co., is bottomed at 2,055 feet and underreaming the 10¾-inch at 2,045 feet.

MONTANA

The Teton Corp. has completed its No. 2 Jones on Section 17-27-4 in the Pondera Field in northern Montana offsetting its No. 1 well completed last fall. On account of the fact that there is very little empty tankage on the Teton lease no test was made but the well put 100 bbls. of oil in a small tank in about five hours. In the same field the Fulton Petroleum Co. is ready to drill in its No. 4 Jones on the SE of Section 8-27-4, offsetting the Teton's new producer. There will be a great deal of drilling on the west side of the Pondera Field this season, but at present the highways are in such condition it is nearly impossible to move material.

The Cosmos Petroleum well in the new Buckley Field on the international boundary has finally been successfully cemented, according to reports from the field. This should be the next completion in the border field. On the Canadian side of the line the Vanalta Co. has completed its second well with a production expected to equal that of the discovery well, and this will no doubt give further impetus to development work. The Monalta Oil Co. is ready to drill into the Sunburst sand in its No. 1 and is rigged ready to spud its No. 2. The Mid-Continent Oil Co.'s (MacDonald) No. 2

Farbo on Section 2-37-4 is drilling and work has been resumed at the Thomas location in Section 1-37-4. The Monalta No. 1 is some distance southeast of the other wells and if no oil is found the field will be extended considerably in that direction. The Illinois Pipe Line Co. and the Maple Leaf Refining Co. are nearing completion with their respective pipe lines from the Buckley Field to the railroad.

The Carroll Brothers well on the Fifer lease in the Cat Creek Field, completed some months ago, was put on production last week. The well made 32 bbls. in a 24-hour period.

Sunburst Field

One completion was reported this week for the Kevin-Sunburst Field, the Ohio Oil Co. having drilled in its No. 5 Howling on Section 10-35-2 at 1,650 feet. This well has been on top of the sand for several weeks. Production is rated at 30 bbls.

The Square Deal Oil Co. found sulphur water at about 3,470 feet in its well near Joplin, but the well will be carried to the first break in the Madison lime. This well has reported showings of oil and gas at various depths.

The Ohio Oil Co. is on top of the second Frontier sand in its No. 2 on Section 11-7-21, Dry Creek structure. This well showed gas in the upper Frontier and it is hoped it will find oil in the second sand at 4,350 feet. It will probably be drilled in this week.

On the Crown Butte structure the Piegan Oil Co. is still trying to drill past tools lost in the hole several weeks ago. This well is on a block of 75,000 acres about 35 miles west of Great Falls, and is considered one of the most interesting wildcats now drilling.

Rocky Mountain Production

Daily average pipe lines runs from the various pools in the Rocky Mountain area for the week ending March 8:

WYOMING	
Salt Creek	26,270
Frannie	400
Big Muddy	2,070
Oregon Basin	3,900
Dutton	....
Elk Basin	700
Ferris	40
Grass Creek	2,070
Hamilton	720
LaBarge	2,040
Lance Creek	160
Lost Soldier	3,070
Osage	670
Poison Spider	140
Rock River	2,230
Rex Lake	90
Lander	410
Simpson Ridge	....
Teapot Dome	20
Greybull	....
Total	45,000
MONTANA	
Cat Creek	1,230
Kevin-Sunburst	4,940
Pondera	2,100
Lake Basin	70
Total	8,340
COLORADO	
Moffat	1,064
Fort Collins	1,602
Florence	530
Iles	976
Tow Creek	343
Boulder	25
Rangley	100
Total	4,640
NEW MEXICO	
Artesia	683
Cap Rock (Maljamar)	962
Hogback	460
Rattlesnake	1,127
Table Mesa	110
Jal	1,482
Hobbs High	69
Getty	....
Lea	6,265
Miscellaneous	760
Total	11,918
Grand total	69,898

PANHANDLE FIELDS

(Continued from Page 84)

Oil Co.'s No. 1 Portwood was dry and abandoned at 1,452 feet.

Clay County

Big State Oil & Gas Co.'s No. 1 American Refining Properties was dry and abandoned at 2,302 feet. Reno Oil Co.'s No. 1 Nutter was dry and abandoned at 802 feet.

Cooke County

R. F. Smith's No. 1 Dickerson was dry and abandoned at 2,013 feet. American Refining Co.'s No. 1 Field was dry and abandoned at 1,526 feet.

Jack County

Panhandle Oil & Refining Co.'s No. 3 Box swabbed 260 bbls. daily at 3,110-17 feet. Its No. 2 Leffell Morrisey-A was shot with 20 quarts at 3,113-33 feet and had an initial production of 60 bbls.

Montague County

Continental Oil Co. and Bridwell's No. 4 Cunningham had an initial production of 41 bbls. at 1,229-71 feet.

Throckmorton County

Donnelly and others' No. 1 Reynolds was dry and abandoned at 828 feet.

Young County

Liedecker and others' No. 1 Wadley was dry and abandoned at 4,565 feet. Bridwell's No. 1 Leberman was dry and abandoned at 970 feet. F. E. Butler's No. 1 Andrews was dry and abandoned at 895 feet. Cranfill and The Texas Company's No. 1 Gass and others was dry and abandoned at 1,303 feet. C. B. Long's No. 2 Hausler was dry and abandoned at 1,215 feet. Martin-Cochran's No. 1 Slater was dry and abandoned at 802 feet. Mitchell & Cooper's No. 1 Wilson was dry and abandoned at 1,010 feet. Mitchell & Palmer's No. 1 West was dry and abandoned at 1,155 feet. Petroleum Production Co. and Madden's No. 4 Dietrich had an initial production of 160 bbls. at 1,104-30 feet. W. R. Stafford's No. 1 Brooks was dry and abandoned at 509 feet. Stump & Heydrick's No. 4 Daniels had an initial production of 74 bbls. at 874-90 feet. Ven-Mex Oil Co.'s No. 1 Jones was dry and abandoned at 943 feet. Wise & Porterfield's No. 4 Cullers was dry and abandoned at 682 feet. D. L. Wolf's No. 4 Hill had an initial production of 50 bbls. at 1,018-30 feet. Womack Oil Co.'s No. 3 Roach had an initial production of 15 bbls. at 739-45 feet.

Wilbarger County

Atlantic Oil Producing Co.'s No. 8 Sigler-Waggoner location was abandoned. Martin and others' No. 2 George had an initial production of 169 bbls. at 2,192-2,210 feet. Shell Petroleum Corp.'s No. 4 Waggoner made 4 bbls. after having been shot with 20 quarts at 2,604-30 feet.

Wichita County

Arkansas Gas & Fuel Co.'s No. 26 Kemp & Kempner had an initial production of 52 bbls. at 1,748-61 feet. Humble Oil & Refining Co.'s No. 21 Taylor had an initial production of 175 bbls. at 1,754-69 feet. T. F. Hunter's No. 11 Waggoner had an initial production of 45 bbls. at 1,282-85 feet. Magnolia Petroleum Co.'s No. 3 Kemp & Blair had an initial production of 15 bbls. at 1,232-34 feet.

RANGER COMPLETIONS

Week Ending March 8

Brown County

Arcadia Refining Co.'s No. 1 Andrews was dry and abandoned at a total depth of 1,408 feet. The Texas Company's No. 7 Johnson had an initial production of 95 bbls. at the top of the pay encountered at 1,294 feet and was drilled to a total depth of 1,306 feet. Bush & Roberts' No. 1 Richardson was temporarily abandoned at a total depth of 1,438 feet. Roberts and others' No. 1 Whitehead was temporarily abandoned at 1,587 feet.

Erath County

Associated Producing Co.'s No. 2 Moring was shot with 40 quarts at 3,300-19 feet and had an initial production of 6,320,000 feet of gas. Brown Drilling Co.'s No. 1 Davis was dry and abandoned at a total depth of 3,470 feet. Culberson Brothers' No. 1 Wyatt was dry and abandoned at total depth of 3,709 feet.

Eastland County

Ed Larson's No. 1 Ramsower was temporarily abandoned at 4,468 feet. Texwa Oil Co. & Kirk's No. 2-B Murrell location was abandoned.

Callahan County

Bradstreet & Holden's No. 15 Miller had an initial production of 60 bbls. after having been shot with 25 quarts from 1,608-27 feet and was drilled to a total depth of 1,630 feet. Gibson & Johnson's No. 2 Jackson had an initial production of 2,069,000 feet of gas with 255-pound rock pressure at a depth of 942-51 feet. Humble Oil & Refining Co.'s No. 1 Jackson-E was dry and abandoned at 1,200 feet. Prairie Oil & Gas Co.'s No. 1 Seale estate was dry and abandoned at 1,502 feet. Young Brothers & Alexander's No. 1 Hickman was dry and abandoned at a total depth of 755 feet.

Coleman County

Continental Oil Co. and Cheney's No. 2 Gardner was dry and abandoned at a total depth of 2,775 feet. Howard Samuels' No. 3 Robertson had an initial production of 15 bbls. after having been shot with 15 quarts at 1,058-62 feet and was drilled to a total depth of 1,071 feet.

Kimble County

Bryant and others' No. 1 Lambert was dry and abandoned at 775 feet.

Palo Pinto County

Brazos River Oil & Gas Co.'s No. 3 Wharton made 500,000 feet of gas at 4,135-63 feet. Wickens and others' No. 1 Ames made 1,250,000 feet of gas at a total depth of 2,985-91 feet.

Shackelford County

Cranfill & Reynolds' No. 3 Matthews had an initial production of 8 bbls. at a total depth of 1,149-53 feet. Holders & Buddrus's No. 1 Compton was dry and abandoned at a total depth of 350 feet.

Stephens County

Hickock P. & D. Co.'s No. 5 Walker made one-half barrel of oil daily and 25,000 feet of gas after having been shot with 60 quarts at 3,000-50 feet.

WEST TEXAS FIELDS

(Continued from Page 83)

Survey, was drilled to a total depth of 2,105 feet, was plugged back to 1,835 feet, topped the pay at 1,751 feet, increased at 1,812 feet and had an initial production of 90 bbls. Humble Oil & Refining Co.'s No. 10 Clay had an initial production of 504 bbls. at 2,861-2,920 feet. Merrick & Bristow's No. 11 D. Roberts had an initial production of 345 bbls. at 2,983-3,005 feet. Moody Oil Corp.'s No. 20-E Dora Roberts had an initial production of 75 bbls. at 2,344-2,536 feet. Pure Oil Co.'s No. 2 Scrivner-A location was temporarily abandoned. California Co.'s No. 5 Roberts Lease No. 1 was drilled to a total depth of 3,250 feet, was plugged back to 3,045 feet, was shot with 160 quarts at 2,955-3,045 feet and pumped 15 bbls. oil and 50 bbls. water.

Jones County

Continental Oil Co.'s No. 1 Phillips, Section 16, Block 19, T.P.R.R. Survey, was dry and abandoned at 3,082 feet.

Pecos County

Mid-Kansas Oil & Gas Co.'s No. 8 Smith, Section 21, Block 194, G.C.&S.F. R.R. Survey, had an initial production of 177 bbls. hourly at 1,565-1,720 feet. World Oil Co.'s No. 2 University was dry and abandoned at 1,659 feet.

NO DECLINE IN MARCH REFINERY RUNS

(Continued from Page 46)

REFINERY OPERATIONS IN ARKANSAS

(Plants which have been in operation during the past year)

Name and address—	Daily capacity	Runs Mar. 1	Runs Feb. 1
James H. Berry & Sons Co., Waterlco	2,000	(*)	1,500
Henry H. Cross Co., Smackover	6,000	5,000	5,000
Houston Oil Co., Camden	3,000	3,000	3,000
Kettle Creek Refining Co., Pearson	5,000	2,600	2,600
Lion Oil & Refining Co., El Dorado	12,000	8,500	8,000
Macmillan Petroleum Products Co., El Dorado	1,800	1,550	1,550
Ouachita Valley Refining Co., El Dorado	2,000	900	700
Root Refining Co., El Dorado	10,000	8,000	8,000
Simms Oil Co., Smackover	3,000	(*)	(*)
Total	44,800	29,550	30,355

*Shut down.

REFINERY OPERATIONS IN WEST TEXAS

(Plants which have been in operation during the past year)

Name and address—	Daily capacity	Runs Mar. 1	Runs Feb. 1
Amarillo Producers & Refiners Corp., Amarillo	3,000	1,000	(*)
Big Spring Refining Co., Big Spring	2,500	1,300	1,900
Bluebonnet Oil Refining Co., Wickett	5,000	(*)	(*)
Burford Oil Co., Pecos City	6,000	5,000	3,500
Central Texas Refining Co., Brownwood	2,000	400	400
Central Texas Refining Co., Luling	2,500	1,500	1,500
Col-Tex Refining Co., Colorado	10,000	7,000	6,000
Cosden Oil Co., Big Spring	15,000	9,500	7,300
Del Rio Refining Co., Del Rio	5,000	2,500	2,500
Grayburg Oil Co., San Antonio	6,000	2,500	2,500
Great Western Refining Co., Big Spring	8,500	3,600	3,000
Gulf Oil & Refining Co., Sweetwater	5,000	5,000	5,000
Humble Oil & Refining Co., San Antonio	5,000	2,700	3,000
Humble Oil & Refining Co., McCamey	15,000	8,000	8,000
Misko Refineries, Inc., Laredo	1,500	500	500
Mid-Tex Refining Co., Midland	2,500	800	900
Pasojex Petroleum Co., El Paso	10,000	9,000	9,200
Pecos Valley Refining Co., Pyote	8,500	(*)	(*)
Pioneer Oil & Refining Co., Somerset	1,500	1,000	1,000
Richardson Refining Co., Big Spring	6,000	3,900	4,000
Rio Grande Oil Co., El Paso	6,000	3,500	3,500
San Angelo Refining Co., San Angelo	2,000	500	500
Sweetwater Oil & Refining Co., Sweetwater	2,000	250	250
The Texas Company, San Antonio	3,000	2,500	2,500
The Texas Company, El Paso	1,500	1,000	1,000
Tonkawa Petroleum Co., Pyote	5,000	1,500	1,000
Texas Mexican Oil & Refining Co., Laredo	1,000	200	200
Texas Petroleum Products Co., Somerset	1,500	800	800
Wickett Refining Co., Wickett	2,500	(*)	(*)
Total	142,000	75,350	69,850

*Shut down.

LOSSES IN NATURAL GASOLINE SHIPMENTS

(Continued from Page 54)

what gasoline they paid for was stable. The "loss" was billed back as outage against the manufacturer along with the freight paid thereon. And I am not so sure but that there was some justification for this practice. Casinghead gasoline was expensive and the refiner took such steps as he found necessary to safeguard his interests. The gasoline manufacturer accepted the situation without so much as a thought about it. Besides he could not afford to be picayunish on a 25 cent market for casinghead gasoline.

All things have an end, and so it came to pass that the golden El Dorado days for the casinghead gasoline manufacturer were to end. In 1921 motor fuel prices softened. Refiners were checking their profits and losses arising out of casinghead, and the books indicated clearly that they had to curtail their use of this material. Casinghead gasoline production had increased under the stimulus of a 25-28 cent price and was now plentiful. The refiner felt he was paying too much and that he was not always obtaining a consistent product. With this attitude on the part of the chief consumer, in the face of a continuing increase in production, the price of casinghead gasoline began slipping until it settled at from 20 to 35 per cent of the former prices.

The depression that overtook the industry brought about gatherings of the best minds engaged in the business to devise ways and means of meeting the situation. An outgrowth of these meetings was the organization of what is now the Natural Gasoline Association of America. An outstanding leader during

that crisis was your own genial and distinguished secretary, around whom our organization took form and had its early remarkable growth.

Standards of Quality

Our association has performed many a piece of work from which the benefits were not confined to our branch of the business alone, but rather did they flow to all departments of this great oil industry. When this new association changed "casinghead gasoline" to "natural gasoline," it did not mean to clothe an old product with a new name. It actually meant to strip the old product of those characteristics that brought it into disrepute. While it could do little at that time regarding the volume of production, it went straight to the heart of the problem when it sought to set up standards of quality. It recognized the fact that all natural gasoline was not alike. Specifications were worked out so that gasoline having different physical characteristics would fall into different classifications, easily distinguishable by seller and buyer. In other words, grades of natural gasoline were established according to their then known values.

Methods of testing were developed to the end that the buyer should be able to buy what product he chose to buy, and that he know by definite tests that the characteristics of the material he received checked with those of the material purchased.

We have gone further than that. We early initiated an independent study of motor fuel, and particularly the value of natural gasoline in motor fuel. We have established that value beyond reasonable question. Through research instituted by natural gasoline manufacturers, methods of fundamental analysis, now in almost universal use by manufacturer and refiner, were perfected, and the characteristics and the value of each component of natural gasoline studied. We have developed processes to eliminate those constituents that have no definite place in motor fuel and have delimited the presence of those fractions which are desirable only to a limited extent, and, thus, in a scientific manner, replaced plant weathering.

Loss Is Valuable

I do not wish to draw on Mr. Smith's paper for this meeting, a paper that is a treatise on the general subject of values, nor burden you with Mr. Brown's findings, or anticipate a very splendid presentation of a paper at our May convention in Tulsa on the use of naturals in building specification motor fuels. But I must touch the high points here and there to show you values so that I can demonstrate that what is lost in handling naturals is also valuable. I need not have others tell you too much about our product. Your own enormous consumption of our production is the best index of what you, here gathered, think of our product.

You are buying apparently for volatility so that you might give to your fuel such characteristics as easier starting, quicker acceleration, and diminution of crankcase dilution. Some of you also think in terms of antiknock value.

It is almost trite to ask what imparts this much desired volatility. The researches of Doctor Brown, Oberfell, and other investigators, have shown that butane and pentane, with their low boiling points, make for desirable volatility, and that these hydrocarbons and propane have the best antiknock ratings. They have incidentally shown that a limited amount of propane is not harmful. One must simply take into account their relative vapor pressures, or that 1 per cent of propane has the effective volatility of more than 4 per cent butane. The extent to which propane may remain in natural gasoline depends largely upon the percentages of the other constituents and upon the character of the refinery stock with which it is to be blended. For reasons of control and stability, however, I do not like to see more than 1 per cent to 1½ per cent of propane in a natural if the percentage of butane even approaches the maximum. In this I am speaking only for myself. When you are buying volatility, therefore, it is most likely that you are buying butane and pentane, for next in the series comes hexane, with a boiling point of 145. I should not think you would want hexane for front end volatility. The function of hexane plus, it would seem, is to provide a carrier for the butane and pentane. Every gallon of hexane in a tank car of natural gasoline is, in a way, excess baggage. It is like carrying coal to New Castle. The greater the percentage of butane in that car, the cheaper you can build volatility into your fuel, for you cannot afford to do it with pentane alone.

Antiknock Value

I should like to say only a word about the antiknock value of naturals. Normal natural gasoline has from 42 to 50 per cent benzol equivalent or a 5.6 highest useful compression ratio. Note also, "III," the H. U. C. of the components of natural gasoline.

III.

Compound—	H. U. C.
Propane	7.5
Iso-Butane	7.1
N-Butane	7.
Iso-Pentane	6.22
N-Pentane	5.85
Hexane	5.2
N-Heptane	3.75

The antiknock rating of butane is strikingly high. On the other hand, the value of hexane is negative. These findings speak for themselves. Check them in your own laboratories.

While the specifications for extant grades of our product are in a general way descriptive of their relative volatility, the association has been working for nearly a year to write a new set of specifications, which will, among other things, more nearly segregate the several products according to their constituent composition, particularly as to their more volatile ingredients. This new indexing of our product will be the result of a tremendous research effort begun nearly four years ago to develop definite values for the various fractions of natural gasoline. It will be given to you to employ as an aid for selectively purchasing your natural gasoline requirements. You will be able to specify within close limits the constituent composition of the natural you wish to purchase, and you will be able to check the quality of your purchases by simple, yet adequate, tests.

What does our industry expect from all this, over and above the natural satisfaction of having perfected its processes of manufacturing, of having improved the qualities of its products, of having developed methods of testing and classifying those products? It wants to feel that you—refiners, its largest customer-group—know that it is co-operating with you, by ever being on the lookout for improving its products. It desires, too, that you know that when you buy a car of natural gasoline of certain specifications, every last drop of that material has a proper place in that car; and it wants you to care for and conserve every gallon laid down at your gates.

What Is Weathered Off?

What is it, after all, that is weathered off of stabilized natural gasoline today? Is it fixed gas as is so often supposed? Let us examine what we find when we "vent" a car at the refinery loading rack. Vapors from a representative car of stabilized gasoline, such as "IV," when examined by fundamental analysis, revealed that in every 1,000 cubic feet of vapors from that car there were 26.49 gallons of butane and heavier, all usable —indeed desirable—gasoline, and that there were actually 11.73 gallons of "AA" gasoline in 1,000 cubic feet of vapor. Yet this good gasoline vapor was taken from a car that had several pounds of internal pressure upon it. The analysis shows the composition of the vapors in gallons of liquid per 1,000 cubic feet of vapor.

Compound—	Gallons per M cu. ft.
Propane	.87
Iso-Butane	1.75
N-Butane	17.12
Pentane	7.62

Value of These Vapors

Who, knowing the character of the vapors that are lost in venting, will argue that this practice can still be justified in this day of controlled products? Many refiners have long recognized the value of these vapors and are saving them. Some refiners gauge the cars upon arrival by means of "U" tubes built into the unloading rack; some weigh the cars under load and later when empty; some make use of gauging devices furnished on tank cars, consisting of a tube-stuffing-box arrangement or of especially fitted dome covers. The use of these arrangements makes possible not only the conservation of vapors at the receiving end, but enables and justifies the saving of loading losses, losses equal to several times the unloading losses. In today's picture, with well maintained tank cars, there is practically no outage. The outage we pay for is what I have described as unloading losses.

Unfortunately, not all refiners who save these vapors account for them. Then there are others who neither save the vapors nor account for them. Nor do they vent with due care. Venting in the early morning when the cars are coolest reduces the venting loss, particularly if the venting is not done rapidly. Cars not equipped for tight unloading should be vented only long enough to permit gauging and opening the bottom outlet, and the vapors should be saved. The refiner is custodian of the material in the car and there is a duty upon the refiner to use due diligence. But where cars are equipped, all vapors should be saved and accounted for. The day is surely coming when all cars will be equipped for tight gauging and unloading and sampling. Let us not sleep on precedent. The day was when we allowed our loading vapors to escape, when you lost millions through breathing in storage and through uncondensed still vapors, when oil vapors were lost on the leases. In those days of unstabilized casinghead, perhaps loading vapors contained excessive amounts of fixed gases; perhaps in skimming plant operation still vapors were not worth saving; but today all of you have your profitable tail gas recovery plant, and many of you no doubt have found a new use for it by recovering unloading vapors through it.

Curtailing Losses

The refinery can curtail losses by having its natural gasoline requirements arrive about as needed to avoid building up a large cars-on-hand situation. It should have some pressure storage into which to unload and maintain a supply of naturals for emergency use. Gasoline can be unloaded into this pressure storage without loss. If air or gas is used to make the transfer from tank car to storage, due care will be taken to shut off the air supply when all of the contents of the car have been delivered. Otherwise, the gas or air may become a vehicle for carrying out untold volumes of gasoline.

I have briefly touched upon the value to you of several of the components of natural gasoline. I have shown you how their presence in the different products is now controlled, and that in the future they will be better controlled by new specifications. I have shown the source of handling losses and how they can be eliminated. Whether or not all of you agree with these conclusions, you must admit that the gasoline you buy is permitted to contain given percentages of various hydrocarbons as part of certain specifications. We, therefore, submit that if, by every test available, the material in the car is precisely of the constituent composition purchased by the buyer, he should gauge the material in the car upon its receipt and account to the shipper for the volume of gasoline laid down. Such gauging should be done without releasing what confining pressure may exist within the car if the vapors, valuable beyond question, are to be conserved.

DEPRECIATION SHOWN IN REFINERY EQUIPMENT

(Continued from Page 54)

your maintenance doubled too. You had more still bottoms to replace, more vapor lines and condensers to renew but you had to keep going and the only way to fight lower margins and supply increased consumption was to run more crude and try to keep earnings up in that manner. The successful operation of any refinery seems to depend on the ability to crowd every possible barrel through the facilities that are making money. Those of you who operate pressure stills know how important volume of throughput is and how we are forced to run equipment to the very limit.

These new factors of expense must be overcome and provided for in some manner and it seems that the most satisfactory method is to set up some depreciation and obsolescence rates that are adequate to cover the individual needs of every type of refinery equipment. Such rates would naturally depend on management policy regarding maintenance expense and also on the type of construction and kind of crude run; however, they should be sufficiently high to cover replacements but not high enough to permit accruals to exceed replacement demands. Good depreciation rates can also be used to advantage in calculating Federal taxes and should by all means be used for this purpose. The establishment of a policy covering maintenance is essential to proper consideration of depreciation. Most refiners have set up a system in which all minor repair work is charged to normal maintenance and in this way they expect to keep their plants in first class condition. Of course, large items and obsolescence would not be considered and therefore, such practice is not satisfactory if a true condition is desired. It is only by the utilization of a conservation of proper manufacturing expenses and depreciation rates that the refinery operator can satisfactorily calculate actual costs and if he wants to be fair with himself and the executives of his company it is imperative to use both intelligently along with the obsolescence factor.

Crude Varies In Quality

Many plants are operating on sweet crudes, and in some cases the source of supply is definitely established; such plants are fortunate enough to enjoy relatively low depreciation rates. Others depend on large gathering systems for their crude supply and naturally the depreciation rates should be higher because of different crudes handled and the possibility of handling very corrosive oil from time to time. Each plant probably presents a separate and distinct problem and they should be considered as such. Many plants have special problems. I recall one plant where it was practically impossible to keep rundown lines from condensers to the rundown tanks in repair. Other plants find that condensers are a source of great trouble, or roof corrosion may be a serious difficulty; everyone apparently has all the usual trials and tribulations of refining petroleum with a few special ones thrown in, which means that each operator must necessarily establish his own depreciation rates.

Depreciation Rates

To provoke discussion, I have listed a few comments on the principal items of refinery equipment. Several refiners have contributed depreciation rates and the following remarks are based on either their rates or their own comments on such rates. It is realized that depreciation can start an argument among refinery men that would be only excelled by the cracking patent situation; however, the following figures are presented for your consideration.

Beginning with automobiles and trucks, we find that most refiners generally agree that a high rate is necessary, several use 25 per cent while the majority use 33⅓ per cent. For the benefit of the managers present, it might be mentioned that depreciation rates could be materially reduced on this type of equipment by furnishing Packards or Pierce Arrows to all refinery superintendents.

Buildings reveal some variation; brick, reinforced concrete, transite and steel or galvanized iron would probably all take slightly different rates. The average used seems to be 5 per cent while some are as low as 3 per cent and others as high as 7.5 per cent. Condenser boxes seem to be fixed about 5 per cent—one refiner using 10 per cent, perhaps due to bad water conditions. Condensing

equipment and cooling coils raise some very marked differences, depending on whether used on crude or cracking stills. One refiner reports 33⅓ per cent on pressure still condensers while the crude still variety are quoted at 6¼ per cent to 25 per cent. Naturally, this item is a particular thorn to some plants and corrosion conditions would vary the depreciation rates.

Agitators, boilers and loading racks are listed at 6¼ per cent to 10 per cent and unless conditions are very bad this seems sufficient. Pumps and compressors take a somewhat higher rate, one refinery being as low as 6¼ per cent while a majority use 15 per cent. Water pump stations average 7½ to 10 per cent while laboratory equipment appears to be 25 per cent due to the fragile and delicate apparatus used. Furniture and fixtures is listed at about 10 per cent, one refiner being as low as 7.5 per cent. Tools take a considerably higher rate, one plant reporting 50 per cent while others use 33 per cent and 15 per cent. Possibly the refiner using 50 per cent has established a "disappearance rate" instead of a depreciation rate and I would suggest that he move the machine shop further away from the fence and make it more difficult to throw 10 inch chain tongs over on the road.

Storage tanks are established at approximately 5 per cent while small tanks are listed at 10 per cent. This may be too low, especially at plants where serious corrosion is encountered on rundown tank roofs. Oil pipelines represent a large portion of refinery investment and most refiners use 5 per cent for a depreciation rate. Unless soil conditions are unusually bad this should be adequate. Tank cars are quoted at 4 to 5 per cent and with proper repairing facilities this seems sufficient, while tank car repair shop and equipment is somewhat higher, being 10 per cent.

Crude stills and fractionating towers show some startling variations which probably reflect the different conditions under which each refinery operates. One reports 15 per cent while the majority use 10 per cent. One refiner is as low as 6¼ per cent, another uses 7 per cent. It is likely that the plants using a high depreciation rate for this type of equipment are trying to include an obsolescence factor as no facility becomes obsolete any faster than distilling equipment, whether it be operated at atmospheric or high pressures. The kind of crude run would affect the rate more on this type of equipment than any other except pressure stills and probably each rate can be justified at each particular plant.

Pressure Still Depreciation

Pressure stills have really caused most refiners to be concerned about depreciation and it is significant that all the men solicited for information gave very explicit explanations on this item of refinery equipment. Some favor an over-all rate on all cracking equipment while others manifest a desire to have distinct rates on chambers, piping, condensing coils, furnaces and the other items that make up a complete pressure still. On pressure piping alone, one plant uses 25 per cent while another favors 33⅓ per cent and still another requires 50 per cent. While the usefulness of cracking equipment is relatively short-lived, there is always the possibility of some salvage value; however, the obsolescence factor again enters and it appears more desirable to have the rate slightly high rather than too low. This is especially true as these stills present more of an operating hazard and are subject to unusually hard service. The plants combining all pressure still equipment in one group use anywhere from 10 to 25 per cent as a depreciation rate. The type of still and quality of charging stock being the determining factor.

The only other item to be discussed is sewers and traps which show very remarkable variations. Two plants use 7 per cent while several others use 10 per cent and one requires 33 per cent, which I believe was an agitator sewer. It would seem offhand that too much acid was used in the sewer and not enough in the agitators.

The above rates have been collected from many Mid-Continent refiners and both small and large plants are included so that some very fair average conditions should be reflected by this information.

Several of the larger operating units have established a flat rate for the entire plant, exclusive of pressure stills, and use 10 per cent while the cracking equipment requires 20 per cent and these seem fair enough figures for an average refinery operating on average Mid-Continent crude, but the variations already mentioned should point out the necessity of careful study on each plant so that the depreciation rates may be adequate to cover actual replacement costs and permit the management to establish proper relationships between cost and sales prices so that satisfactory earning power may be maintained.

VAN POOL WESTERN TEST SHUT DOWN FOR ORDERS

By L. E. Bredberg

FORT WORTH, Tex., Mar. 10.—No completions were registered in the Van Pool during the week, but several will be due within a few days, as they have been coring the Woodbine, and casing set in some of them, preparatory to drilling in.

Pure Oil Co.'s No. 1 Crim, the western edge test, is now shut down at 3,037 feet waiting on orders. The slight showings of oil in this well have not been too encouraging, and the well has run far below any of those now on production in the field. If it is abandoned at this depth it will be the first defining test of the pool, and will rather cast a stigma over those drilled on the western side, or to the west of it.

The Shell Petroleum Corp. has made a location on its LaRue block around the town of LaRue in eastern Henderson County. This has been one of the most active areas in East Central Texas for several weeks. The block was geologized, worked by instruments and core drilled, and now will be given a deep test.

Central Oil Co.'s No. 1 West, in the Ben Wheeler district, will drill deeper from 3,535 feet. It was reported as abandoned but owners decided to carry deeper.

VAN ZANDT POOL PRODUCTION
March 8

Company and well—	Bbls.
Pure's No. 1 Jarman, two 1-inch chokes	556
Pure's No. 1 Thompson, one-half-inch choke	1,332
Shell-Pure's No. 1 Tunnell, one-half-inch choke	1,330
Shell-Pure's No. 2 Tunnell, one-half-inch choke	1,394
Pure-Texas' No. 1 Tunnell, 1-inch choke	275
Pure's No. 1 Wells, three-fourths-inch choke	933
Shell's No. 1 Fowler, one-half-inch choke	1,301
Pure's No. 1 Magers, two 1-inch chokes	420
Sun's No. 1 Thompson, one-half-inch choke	1,046
The Texas Company's No. 1 White, one-half-inch choke	1,106
Total	9,693

EAST CENTRAL TEXAS

Boggy Creek	3,420
Cedar Creek	50
Currie	367
Hill County	45
Mexia	4,178
Minerva	500
Nigger Creek	175
Powell	5,955
Richland	250
Thrall	217
Van	9,982
Wortham	880
Total East Central Texas	26,019
Week ending March 1	25,786
Increase	233

VETERAN SUPPLY MAN DEAD

BRADFORD, Pa., Mar. 8.—Patrick J. O'Connell, for 40 years a salesman for the Oil Well Supply Co. in this city, died here after two years of ill health. Mr. O'Connell was a native of Ireland. He joined the Oil Well Supply Co. in 1888 and remained with the company until ill health caused his retirement in 1928. Mrs. O'Connell and one son, John E. O'Connell, with Roeser & Pendleton, Fort Worth, Tex., and one daughter, Miss Mary, survive.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 83)

Forrest Oil Co.'s No. 1 Skinner, C SW SE, Sec. 100, Blk. 2, G.C.&S.F. Sur. ..... Drlg. 1,260 ft.
Trans-Pecos O. & G. Co.'s No. 1 Jones, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.&S.F. R.R. Sur. ..... Drlg. 1,950 ft.; show oil 1,830 ft.
Van McPhail's No. 1 McIntyre, SE cor., Sec. 59, Blk. 352, 7 mi. S of Alpine ..... Shut down 1,740 ft.

COKE COUNTY

Arkansas Fuel Oil Co.'s No. 1 Stepp, 1,020 ft. NE, 2,340 ft. W of SE cor., Sec. 25, Blk. 1-A, H.&T.C. Sur. ..... Location.
Cates & Fitzhugh's No. 1 Mimms, 660 ft. N and W of SE cor. Sec. 39, Blk. W, T.&P.R.R. Sur. ..... Location.
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft. ..... Shut down 2,892 ft.
Mid-Kansas Oil Co.'s No. 1 W. E. Lackey, 330 ft. N and E of SW cor., Sec. 272, Blk. 1-A, H.&T.C. Sur. ..... Pay 3,755-56 ft.; total depth 4,250 ft.

CONCHO COUNTY

Duffy et al's No. 1 Callan, 1,520 ft. N and 1,120 ft. W of SE cor., Sec. 21, Blk. 10, H.&T.C.R.R. Sur. ..... Spudded and shut down.
Turner et al's No. 1 Borsig, 150 ft. from S of SE cor., G. Emmig Sur. 130, 6 mi. W of Paint Rock ..... Shut down 735 ft.
Watchorn O. & G. Co. et al's No. 1 Noyes, 1,320 ft. from N and W of Sec. 19, Blk. 70, H.&T.C. Sur. ..... Location.

CRANE COUNTY

Cranfill et al's No. 1 Tubb, 2,310 ft. from N and 330 ft. from E of Sec. 8, Blk. B-27, Public School Land .... Location.
Duffy et al's No. 1 Cowden et al, 660 ft. from S and W lines of Sec. 18, Blk. X, C.C.S.D.&R.G.N.G. Sur. ..... Shut down 668 ft.
Humble Oil & Ref. Co.'s No. 2-C University, 2,310 ft. N and 330 ft. W of SE cor. Sec. 40, Blk. 30, University Land ..... Drlg. 150 ft.
Simms and Atlantic's No. 1 University, 2,310 ft. from N, 990 ft. E, Sec. 39, Blk. 30, University Land ..... Top salt 1,070 ft.; shut down 3,032 ft.; top pay 2,906 ft.; cleaning out after shots.
Warner-Quinlan Co.'s No. 8 University, 990 ft. S and 330 ft. W of NE cor. of SW, Sec. 39, Blk. 30, University Land ..... Drlg. 2,220 ft.

CROCKETT COUNTY

California Co.'s No. 2 Shannon, Lease No. 3, 258 ft. N and 2,997 ft E of Sec. 42, T.C.R.R. Sur. ..... Location.
Empire Gas & Fuel Co.'s No. 1 Shannon, 330 ft. N and E of Sec. 42, T.C.R.R. Sur. ..... Top salt 1,130 ft.; top lime 2,468 ft.; top pay 2,615 ft.; total depth 2,660 ft.; 1 bbl. oil per hour; shot 50 qts. from 2,615-30 ft.; to put on pump.
Lewis & Daniels' No. 1 Pecos River bed, 19 yds. S and 37° E of NW cor., Sec. 33, Blk. 1, I.&G.N. Sur. ..... Shut down 1,407 ft.
Magnolia Pet. Co.'s No. 1 Hoover, 2,310 ft. from N and 330 ft. from E of Sec. 12, Blk. 1, G.C.&S.F.R.R. Sur... Top salt 660 ft.; drlg. 1,695 ft.

CULBERSON COUNTY

Grisham & Hunter Oil Corp.'s No. 1 Seay, 330 ft. from S and W of Sec. 16, Blk. 59, Twp. 7, T.&P.R.R. Sur. ... Total depth 2,995 ft.; top Delaware 2,934 ft.; 5,000,000 ft. gas at 2,995 ft.; cleaning up wreckage after fire.
Grisham & Hunter Corp.'s No. 1 Garren, 2,310 ft. from S and 330 ft. from E of Sec. 18, Blk. 89, P.S.L. Sur. .... Location.
Hickey & Stiver's No. 1 C. O. Finley, 600 ft. N and 1,980 ft. W, Sec. 20, Blk. 82 ..... Small show oil 1,331 ft.; shut down 2,275 ft.; hole full water; elev. 3,874 ft.
Kornrumpf et al's No. 1 Garren, 330 ft. S and W Sec. 15, Blk. 79, Public School Land ..... Rigging up.
West Coast Oil & Exploration Co.'s No. 1 McGregor, C NW, Sec. 14, Blk. 81 ..... Slight show oil 740 ft.; shut down 875 ft.; may abandon.
Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E, Sec. 1, Blk. 97, Public School Land ..... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; oil show 2,528 ft.; hole full sulphur water; running 6-in. casing; shut down 3,508 ft.

ECTOR COUNTY

Cosden Oil Co.'s No. 1 Kloh & Rumsey, 990 ft. S and 330 ft. E NW cor. Sec. 17, Blk. 44, Twp. 3s, T.&P. Sur. ..... Spudding.
Cosden Oil Co.'s No. 3 University-B, 2,310 ft. S and 440 ft. W of NE cor. of Sec. 2, Blk. 35, University Land ..... Drlg. 830 ft.
C. P. Davis et al's No. 1 Hendricks, C SW Sec. 46, Blk. 42, Twp. 2s, T.&P.R.R. Sur. ..... Cleaning out 800 ft.
Gibson & Johnson's No. 1 Scharbauer, 990 ft. from N and E of Sec. 4, Blk. B-15, Public School Land ..... Building rig.
Gulf Prod. Co.'s No. 1 State, 330 ft. N and 440 ft. W of SE cor. of S 160 ac. of Sec. 1, Blk. 35, University Land ..... Drlg. 600 ft.
Gulf Prod. Co.'s No. 1 State-A, 330 ft. S, 440 ft. W of NE cor. of N half of S half Sec. 2, Blk. 35, University Land ..... Waiting on cement to set 750 ft.
Humble Oil & Ref. Co.'s No. 2 Kloh-Rumsey-D, 2,310 ft. S and 440 ft. E of NW cor. of Sec. 7, Blk. 44, Twp. 3s, T.&P. Sur. ..... Drlg. 2,055 ft.
Humble et al's No. 3 Kloh-D, 2,325 ft. N and 440 ft. E of SW cor. Sec. 7, Blk. 44, Twp. 3s ..... Drlg. 880 ft.
Humble et al's No. 4 Kloh-D, 322 ft. N and 440 ft. E of SW cor. Sec. 7, Blk. 44, Twp. 3s ..... Drlg. 610 ft.
Humble O. & R. Co.'s No. 7-D Kloh et al, 330 ft. from N and 440 ft. from W of Sec. 7, Twp. 3s, Blk. 44, T.&P. Sur. ..... Location.
Humble Oil & Ref. Co.'s No. 2 York, 990 ft. S and 440 ft. E of NW cor. of Sec. 16, Blk. 44, Twp. 3s, T.&P. Sur. ..... Drlg. 2,580 ft.
Humble Oil & Ref. Co.'s No. 3 York, 1,650 ft. S and 440 ft. E of NW cor. Sec. 16, Blk. 44, Twp. 3s, T.&P. Sur... Drlg. 2,255 ft.
Humble et al's No. 4 York, 323 ft. S and 440 ft. E of NW cor. Sec. 16, Blk. 44, Twp. 3s ..... Drlg. 425 ft.
Humble et al's No. 5 York, 2,334 ft. S and 440 ft. E of NW cor. Sec. 16, Blk. 44, Twp. 3s ..... Drlg. 640 ft.
Humble et al's No. 6 York, 2,991 ft. S and 440 ft. E of NW cor. Sec. 16, Blk. 44, Twp. 3s ..... Drlg. 725 ft.
H. F. Wurtz' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW, Sec. 16, Blk. 46, Twp. 3s, G.M.M.Br.&A. Sur. ..... Spudded and shut down.
Landreth Prod. Corp.'s No. 1-A University, NE Sec. 3, Blk. 35, 110 ft. E of No. 1-T ..... Spudding.
Landreth Prod. Corp.'s No. 2 University-S, 330 ft. S and 440 ft. W of NE cor. Sec. 2, Blk. 35, University Land ..... Drlg. 895 ft.
Landreth Prod. Corp.'s No. 2-T University, 990 ft. from N and 330 ft. from E of Sec. 3, Blk. 35 ..... Drlg. 2,328 ft.
Llano Oil Co.'s No. 1 Midland, 330 ft. N and W of Sec. 18, Blk. 44, Twp. 3s, T.&P.R.R. Sur. ..... Drlg. 3,755 ft.
T. P. Coal & Oil Co.'s No. 1 McKenzie, 1,650 ft. from S and 330 ft. from E of Sec. 28, Blk. 45, Twp. 2s, T.&P. Sur. ..... Location.
R. R. Penn et al's No. 1 Goodman et al, 2,640 ft. N and 330 ft. W of SE cor. Sec. 27, Blk. 44, T.&P.R.R. Sur... Location.
Simms Oil Co. et al's No. 1 University (was Landreth Prod. Corp.), 2,310 ft. N, 440 ft. W SE cor. Sec. 1, Blk. 35, University Land ..... Rig.

Skelly Oil Co. et al's No. 1 University-A, 990 ft. S and 440 ft. N of NE cor. Sec. 1, Blk. 35, University ..... Rigging up.
Wurtz' No. 1 Obleetson et al, 330 ft. from N and 2,310 ft. from W, Sec. 16, Blk. 46, Twp. 3s, T.&P. Sur. ..... Location.

EL PASO COUNTY

Laytex's No. 1 Malone, 2,200 ft. SW and NW, Sec. 46, J. M. Day Sur. ..... Shut down 1,481 ft.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlow, Sec. 60, V-8, J. C. Clift Sur. ..... Shut down 3,000 ft.

FISHER COUNTY

Cranfill & Reynolds' No. 1 Johnson, 440 ft. from N and 1,540 ft. from W of Sec. 3, Blk. R, Richardson Sur... Drlg. 1,715 ft.
Cranfill & Reynolds' No. 2 Willingham, 330 ft. from N and E of NW, Sec. 199, B.B.B.&C.R.R. Sur..... Location.
Magnolia Pet. Co.'s No. 1 Lee, Sec. 357, 2,310 ft. from N and 4,286 ft. from W ..... Drlg. 5,670 ft.
Mid-Kansas' No. 1 Stephens, Sec. 26, 1,800 ft. from N, 330 ft. E, El Paso County School Land ..... Drlg. 4,185 ft.

GAINES COUNTY

Louisiana Oil & Ref. Co.'s No. 1 Ralph, 1,320 ft. from S and W of Sec. 7, Blk. A-28, Public School Land ... Plugging; total depth 4,750 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 6, H.&G.N. Sur. ..... Location.
Pandem Oil Corp.'s No. 1 Stokes, 2,310 ft. N and E of SW, Sec. 32, Blk. 5, G.H.&H.R.R. Sur. ..... Total depth 3,018 ft.; show oil 2,908-18 ft.; plugged back to 2,938 ft.; cleaning out and plugging back to shut off water after 90-qt. shot from 2,908-28 ft.; 200 ft. oil and 1,700 ft. water in hole; cleaning out and plugging back.

GLASSCOCK COUNTY

Amerada Pet. Corp.'s No. 2 Coffee, 1,650 ft. S and 2,310 ft. E of NW cor. Sec. 22, Blk. 33, Twp. 2s, T.&P. R.R. Sur. ..... Shut down 2,270 ft.; top pay 2,186 ft.; increase 2,265 ft.; swabbed 205 bbls. in 2 hrs.
California Co.'s No. 1 Baker, 2,310 ft. from S and 990 ft. from W, Sec. 23, Twp. 2s, Blk. 33, T.&P. Sur. ..... Rig.
California Co.'s No. 1 Jones, 330 ft. S from N and E lines, Sec. 25, Blk. 33, Twp. 2s, T.&P. Sur. ..... Derrick.
Group No. 1 Oil Co. and Continental Oil Co.'s No. 1 Miller, 330 ft. S and 990 ft. E of NW cor. Sec. 162, Blk. 29, W.&N.W.R.R. Sur. ..... Drlg. 1,260 ft.
Group No. 1 Oil and Continental Oil Co.'s No. 1 Phillips, 330 ft. S and 990 ft. E NW cor. Sec. 24, Blk. 33, Twp. 2s, T.&P.R.R. Sur. ..... Cleaning out 1,870 ft.; show oil 1,360 ft., 1,700 ft. and 1,800 ft.
F. H. E. Oil Co.'s No. 1 Cox, 330 ft. from S and E of SW Sec. 8, Blk. 33, Twp. 2s, T.&P. Sur. ..... Drlg. 1,710 ft.
Simms Oil Co.'s No. 3 Coffee, 990 ft. from N and 330 ft. from W of E half Sec. 22, Blk. 33, Twp. 2s ..... Shut down 2,276 ft.; top pay 2,195 ft.; increase at 2,247 ft.; swabbed 50 bbls. per hr.
Timberlake & Snyder's No. 1 Meek, 2,310 ft. W and 1,600 ft. N of SE cor., Sec. 7, Blk. 34, Twp. 3s, T.&P. Sur... Show oil 970 ft.; shut down 2,025 ft.
World Oil Co.'s No. 2-C McDowell, Sec. 21, Blk. 34, Twp. 2s, 330 ft. S and 2,310 ft. E of NW cor. ..... Oil from 2,435-42 ft.; now pumping 5 bbls. oil, 12 bbls. water; total depth 2,480 ft.; to shoot.

HOWARD COUNTY

American Maracaibo Co.'s No. 4-A Settle, 1,040 ft. S and 330 ft. E of NW cor. Sec. 6, Blk. 32, Twp. 2s, T.&P. Sur. ..... Show oil 2,050 ft.
California Co.'s No. 11 Roberts, Lease 2, 990 ft. N and 2,188 ft. W of SE cor. Sec. 137, Blk. 29, W.&N.W. R.R. Sur. ..... Shut down 2,875 ft.
Cosden Oil Co.'s No. 6 Roberts-A, 200 ft. N and E of SW cor. Sec. 129, Blk. 29, W.&N.W.R.R. Sur. ..... Shut down 1,456 ft.; sulphur water 1,433-46 ft.
Group No. 1 and Continental Oil Co.'s No. 3 Overton, 990 ft. from N and 330 ft. from E line of Sec. 5, Blk. 32, Twp. 2s, T.&P.R.R. Sur. ..... Total depth 2,284 ft.; top pay 2,148-53 ft.; increase 2,265 ft.; shot and clean out 2,025 ft.; casing collapsed; fishing.
McGinley-Sigler's No. 1 Hyman-B, 330 ft. S and W of NE cor. SW Sec. 89, Blk. 29, W.&N.W. Sur. ..... 500,000 ft. sweet gas 1,241-50 ft.; total depth 1,600 ft.
McGinley-Sigler's No. 1 Hyman-C, 330 ft. N and 990 ft. W SE cor. Sec. 93, Blk. 29, W.&N.W.R.R. Sur. ..... Location.
Merriwether's No. 1 Smith, 150 ft. from S. 2,490 ft. from W, Sec. 45, Blk. 33 ..... Shut down 2,275 ft.;
Moody Oil Corp.'s No. 23-B Roberts, 990 ft. from N and W of Sec. 137, Blk. 29 ..... Set 10-in. casing; shut down 261 ft.
Simms Oil Co.'s No. 2 Clay, 330 ft. from S, 2,310 ft. from W, Sec. 127, Blk. 29 ..... Oil show 1,570-80 ft.; underreaming 5 3/16-in. casing 3,070 ft.

HUDSPETH COUNTY

California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor., Sec. 19, Blk. E ..... Drlg. 3,895 ft.
Carl Cromwell's No. 2 Nutt, 504 ft. S and 1,162 ft. E of NW cor., Subd. 6, Gonzales County School Land ..... Location.
Western States Oil Co.'s No. 1 Moore, C SE Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ..... Shut down 2,760 ft.
Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW, Sec. 12, Blk. 18 ..... Fishing 3,155 ft.

IRION COUNTY

Baker & Hodges et al's No. 1 Tankersley, 750 ft. from N and 170 ft. from W of Sec. 23, G.C.&S.F. Sur. .... Shut down 1,430 ft.
Beesley's No. 1 Sawyer Cattle Co., 1,320 ft. N and E of SW cor., Sec. 3,032, Blk. 24, H.&T.C.R.R. Sur. ..... Water 1,705-10 ft.; more water 1,730-40 ft.; shut down 1,950 ft.
Crawford Oil Co.'s No. 1 Williams, 450 ft. from N, 150 ft. from W, Subd. 8 ..... Shut down 1,105 ft.
Cromwell's No. 2 Nutt, 504 ft. from N and 1,162 ft. from W of Subd. 6, Gonzales County School Lands... Location.
Kingwood Oil Co. et al's No. 1 J. D. Suggs, SE NW SE, Sec. 19, Blk. 7, H.&T.C. Sur. ..... Show gas 7,656 ft.; encountered 2,-400 ft. sulphur water 7,818 ft.; plugged back with lead wool to 7,718 ft.; plugged back with cement to 7,668 ft.; shot 20 qts. 7,645-68 ft.; no results; now plugging back to shoot upper shows
J. A. Starkweather's No. 1 Lindley, Sec. 1,160½, 900 ft. from S, 150 ft. from E, H.&T.C. Sur. on E ..... Drlg. 2,875 ft.
P. H. Williams' No. 1 Ash, C of Sec. 20, Washington County ..... Cleaning out 7,700 ft.

JONES COUNTY

Mid-Tex Oil & Gas Co.'s No. 1 King ..... Drlg. 1,760 ft.
Phillips Pet. Co.'s No. 1 Coates, 900 ft. S and 330 ft. W of NE cor. W half SW of Sec. 17, Blk. 19, T.&P.R.R. Sur. ..... Building rig.
Shabeen et al's No. 1 King ..... 800 ft. fluid in hole; shut down 2,204 ft.; top pay 2,061 ft.; cleaning out after shot.
W. S. Ware's No. 2 Newman, 150 ft. from N and 2,090 ft. from E of Sec. 52, Blk. 18, T.&P.R.R. Sur. ..... Show oil 2,531-33 ft.; shut down 2,535 ft.

KENT COUNTY

White & Smith's No. 1 Pursley estate, 1,320 ft. from E and 2,640 ft. from S of Sec. 8, Blk. H, H.&T.B. Sur... Shut down 273 ft.

KIMBLE COUNTY

McLean & Jamison's No. 1 Cannon, 1,940 ft. N and 300 ft. W of SE cor. Robert Cochran Sur. ..... Fishing 1,650 ft.

LOVING COUNTY

California Co.'s No. 1 Allen, 330 ft. from SE and SW of Sec. 90, Blk. 1, W.&N.W. Sur. ..... Spudding 110 ft.
California Co.'s No. 1 Reagan & McElvain, 330 ft. SW of NE line and 330 ft. SE of NW line, Sec. 84, Blk. 1, W.&N.W.R.R. Sur. ..... Rigging up.
Lockhart & Co.'s No. 2 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Spudding 100 ft.
Hadlock et al's No. 2 Russell, 1,650 ft. SW of NE line, 2,310 ft. NW of SE line, Sec. 80, Blk. 1, W.&N.W. R.R. Sur. ..... Rigging up.
Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W, Sec. 91, Blk. 1, W.&N.W. Sur. ..... Spudded 140 ft.; shut down.
Lockhart & Co.'s No. 3 Hubbard, 1,650 ft. from NE line, 330 ft. NW line of Sec. 83, Blk. 33, H.&T.C.R.R. Sur.. Location.
Lockhart & Co.'s No. 5 Hubbard, 1,650 ft. SW of NE line and 330 ft. SE of NW line Sec. 83, Blk. 33, H.&T.C. ..... Shut down 2,310 ft.; to test oil show 2,305-08 ft.; swabbing 35 bbls. oil per day, 26 gravity.
Lockhart's No. 1 Wheat & Ramsey, 440 ft. from NE and NW of Sec. 83, Blk. 1, W.&N.W. Sur. ..... Location.

LYNN COUNTY

Lubewell Oil Co.'s No. 1 May, 2,310 ft. S, 2,310 ft. W, Sec. 10, Blk. 7, E.L.R.R. Sur. ..... Shut down 190 ft. for casing.
George McCamey's No. 1 Edwards, 165 ft. N and E, Sec. 5, Blk. 2, L.S.&W. Sur. ..... Top salt 2,140 ft.; oil show 1,580-90 ft.; hole full sulphur water 4,730 ft.; set 6-in. casing 4,733 ft.; shut down 5,040 ft.

MENARD COUNTY

Cromwell & Duffey's No. 2 Winslow, 250 ft. S and E of NW cor. NE of NE, Sec. 36, J. H. Gibson Sur. ..... Drlg. 1,530 ft.
I. C. Barnett's No. 2 Callan, Sec. 1, 1,050 ft. from S, 1,190 ft. W ..... 2½ bbls. water hourly, 1,100,000 ft. gas, 1,268 ft.
Priest's No. 1 Sorrell, 1,000 ft. from E and 200 ft. from S cor. Sec. 132, E.L.R.R. Sur. ..... Drlg. 810 ft.

MIDLAND COUNTY

Pure Oil Co.'s No. 1 Hutt, 2,310 ft. from N and 330 ft. from E of Sec. 14, Blk. 38, Twp. 4s, T.&P. Sur. ..... Rigging up.

MITCHELL COUNTY

Magnolia Petroleum Co.'s No. 7 Mary Foster, 330 ft. from N and W line of Sec. 17, Blk. 29, Twp. 1s, T.&P.R.R. Sur. ..... Running 10-in. casing 1,435 ft.
Morrison et al's No. 2 Morrison, 2,390 ft. from N and 660 ft. from E of Sec. 31, Blk. 28, Twp. 1n, T.&P. R.R. Sur. ..... Rigging up.
Teas & Wheeler's No. 1 Radford, 1,320 ft. N and W of Sec. 1, Blk. 27, T.&P. Sur. ..... Drlg. 4,855 ft.

NOLAN COUNTY

Gibson & Johnson's No. 1 Bond, 1,320 ft. from N and 1,980 ft. from E of Sec. 42, Blk. 20, T.&P. Sur. ..... Drlg. 3,284 ft.

PECOS COUNTY

Amerada Pet. Corp.'s No. 1-B University, 1,650 ft. from W and 990 ft. from S, Sec. 32, Blk. 16 ..... Drlg. 1,481 ft.
Angelo Pet. Co. et al's No. 1 McKenzie, 480 ft. from N and 330 ft. E of CNL Sec. 3, Blk. 604, G.C.&S.F. Sur... Drlg. 235 ft.
Atlantic O. P. Co.'s No. 1 Shearer, 330 ft. from NW and SW Sec. 107, Blk. 10, H.Y.N.R.R. Sur. ..... Drlg. 1,310 ft.; show oil and gas 1,052 ft. and 1,170 ft.
Bennett et al's No. 1 fee, 330 ft. W of CWL of Sec. 1, Blk. 119, G.C.&S.F. Sur., but in Sec. 8 ..... Spudded and shut down.
Cardinal Oil Co.'s No. 1 Tippett-Kirby, 330 ft. W and 1,350 ft. N from center of S line, Sec. 40, Blk. 194, G.C.&S.F.R.R. Sur. ..... Location.
Continental Oil Co.'s No. 6 University, 330 ft. S and 3,031 ft. E of NW cor. of Sec. 6, Blk. 17, University Land ..... Cellar.
Cosby Prod. & Ref. Co.'s No. 1 Cordova, 330 ft. from N and E of S 320 ac., Sec. 11, Blk. 11, H.&G.N. Sur. ... Drlg. 410 ft.
Cosden Oil Co.'s No. 1 McDonald, 350 ft. from N and E of Sec. 1, H.E.&W.T. Sur. ..... Flowing water 1,645 ft.; shut down 2,016 ft.
Cowboy Evans' No. 1 Pecos Valley, 1,307 ft. from SE line, 907 ft. from SW line to Sec. 36, Blk. 3, H.&T.C.R.R. Sur. ..... Location.
Cromwell et al's No. 1 University, 1,980 ft. from S and 1,320 ft. from E, Sec. 16, Blk. 16 ..... Location.
Dixie Oil Co.'s No. 1 McKinzie, 3,300 ft. from N and 2,025 ft. from W of Sec. 15, Blk. 604, G.C.&S.F. ..... Shut down 2,350 ft.
Dixie Oil Co.'s No. 2 Torborg, 450 ft. N, 150 ft. E of SW cor. E half Sec. 539, Arnold & Barrett Sur. ..... Shut down 428 ft.; top pay 322 ft.; est. 250-bbl. well on pump.
A. M. Griffith's No. 1 Ferrenbach et al, 2,112 ft. from W line, 1,320 ft. from S line, Sec. 9, Blk. 603, G.C.&S.F. Sur. ..... Drlg. 2,610 ft.
Galt-Brown's No. 1 Thompson, 660 ft. from S and 1,100 ft. from E Sec. 71, Blk. 194, G.C.&S.F. Sur. ..... Spudding.
Hayes et al's No. 1 Lea, C NW of NE Sec. 9, Blk. 106, T.&St.L. Sur. ..... Location.
Humble Oil & Ref. Co.'s No. 2 Cunningham, 2,640 ft. from N, 330 ft. from W line of Sec. 48, Blk. 11, H.&G.N.R.R. Sur. ..... Drlg. 1,898 ft.
Hussman Oil Co.'s No. 1 Esters, 960 ft. from N and 300 ft. E, Sec. 83, Blk. OW, T.M.R.R. Sur. ..... Total depth 1,420 ft.; fishing.
Independent Oil & Gas Co.'s No. 1 Jasper County School Land, 1,160 ft. from SE line, 160 ft. from NE line, Sec. 21, Blk. 10, H.&G.N.R.R. Sur. ..... Location.
J. L. Kennedy's No. 1 Roberts, C of Sec. 78, Blk. 3, T.&P.R.R. Sur. ..... Shut down 3,132 ft.
Landreth Prod. and Henshaw Bros.' No. 1-E University, 330 ft. N and W of SE cor. W half NE, Sec. 13, Blk. 18, University Land ..... Shut down 950 ft.
Landreth Prod. and Henshaw Bros.' No. 2-I University, 330 ft. S and W of NE, Sec. 24, Blk. 18, University Land ..... Cellar.
Martin A. Meyer et al's (formerly Mauch & Kroger) No. 1 Holmes, S half SW Sec. 5, Blk. 178, T.C. Sur. ..... Shut down at 2,224 ft. with hole full of sulphur water.
Messenger et al's No. 1 Byrne, 2,130 ft. from NW line, 1,830 ft. from SW line, Sec. 54, Blk. 10, H.&G.N.R.R. Sur. ..... Location.
R. E. Moore's No. 1 Arnold, 1,320 ft. from S and 660 ft. from E lines of Sec. 18, Blk. 1, H.&T.C.R.R. Sur. .... Show oil 1,216 ft.; show oil 1,402 ft.; pulling 8-in. casing; shut down 1,615 ft.
J. D. O'Mara's No. 1 Bennett, Sec. 592, 1,460 ft. from S, 150 ft. from E, G.C.&S.F. Sur. ..... Cleaning out 875 ft.
J. D. O'Mara's No. 1 Streety, C of Sec. 1, W. P. Howard Sur. ..... Show oil 1,785 ft.; shut down 1,905 ft.
Pecos Crude Oil Pur. Co.'s No. 4 Pecos Valley, 770 ft. from SW and 1,320 ft. from SE of W, Sec. 22, Blk. 10, H.&G.N.R.R. Sur. ..... Top salt 985 ft.; top pay 1,622 ft.; shot 60 qts. 1,638-50 ft.; total depth 1,650 ft.; to run rods and tubing to test.
Peren Oil Co.'s No. 2 Eaton, C of E of W, Sec. 27, Blk. 3, H.&T.C.R.R. Sur ..... Star machine.
R. W. Porpus et al's No. 1 State Land, 330 ft. S and W lines of NE, Sec. 28, Blk. OW, T.C.R.R. Sur. ..... Location.
M. M. Rowan's No. 1 University, NE, Sec. 25, Blk. 16 .... Total depth 2,490 ft.; plugged back 1,815 ft.; machine moved off.

Phillips Pet. Co.'s No. 3 Monroe, 3,860 ft. from N and 660 ft. from E Sec. 39, Blk. 194, G.C.&S.F. ..... Cellar.
Phillips Pet. Co.'s No. 5 Ramsey, 330 ft. from N and 1,650 ft. from W of Sec. 17, Blk. 194 ..... Underreaming 10-in. casing 840 ft.
Phillips Pet. Corp.'s No. 1 Sheanen, 330 ft. from NE and SE lines of S, Sec. 99, Blk. 10, H.G.N.R.R. Sur. .. Location.
Rector Oil Co.'s No. 1 Young, 330 ft. S and 1,650 ft. E of SW cor. Sec. 26, Blk. 9, H.&G.N. Sur., but in Sec. 4, Blk. 3, H.&T.C. Sur. ..... Star machine.
Southern Crude O. P. Co.'s No. 1 Eaton, 330 ft. from SE line, 1,650 ft. from SW line of Sec. 35, Blk. 3, H.T.C.R.R. Sur. ..... Location.
Southern Crude Oil Pur. Co.'s No. 1 McKenzie, Sec. 10, Blk. 604 ..... Drlg. 2,190 ft.; show oil 2,005 ft.
Shell Pet. Corp.'s No. 1 Percival, 330 ft. from N and E of SE, Sec. 199, Blk. 3, I.&G.N. Sur. ..... Location.
Shell Pet. Corp.'s No. 1-D University, 1,650 ft. from E and 990 ft. from W of Sec. 32, Blk. 16 ..... Drlg. 1,085 ft.; show gas 936 ft.
Shell Pet. Corp.'s No. 2-B Smith, 1,006 ft. S and 330 ft. W of NE cor. Sec. 24, Blk. 194, G.C.&S.F.R.R. Sur. ..... Drlg. 774 ft.
Shell Pet. Corp.'s No. 5 Smith-D, 990 ft. N and W of SE cor. of Sec. 24, Blk. 194, G.C.&S.F.R.R. Sur. ..... Drlg. by tools 435 ft.
Sides & Cloyd's No. 2 Blackstone & Slaughter, C NW of Sec. 34, Blk. A-2, T.&C.R.R. Sur. ..... Shut down 770 ft.
Simms Pet. Co.'s No. 1 University, 1,650 ft. N and 330 ft. W of SE cor. Sec. 21, Blk. 19, University Land .... Shut down 914 ft.
Skelly Oil Co.'s No. 2 University-Bower, 330 ft. S and E of NW cor. of SE Sec. 31, Blk. 16, University ..... Total depth 972 ft.; top pay 964 ft.; flowed 25 bbls. in 20 min.
The Texas Company's No. 1 Wright, 660 ft. from NW line, Sec. 9, Blk. 131, T.&St.L.R.R. Sur. ..... Location.
Transcontinental Oil Co.'s No. 1 University ..... Straightening crooked hole 4,910 ft.
Transcontinental and Arkansas' No. 2 Matthews, 1,060 ft. from E and 330 ft. from N line of SE Sec. 10, Blk. 194, G.C.&S.F.R.R. Sur. ..... Total depth 1,500 ft.; top pay 1,472 ft.; flowing 10 bbls. hr.
Transcontinental and Arkansas Fuel Oil Co.'s No. 1-A Smith, 2,310 ft. from N and 1,290 ft. from E of Sec. 11, Blk. 194, G.C.&S.F. Sur. ..... Drlg. 1,065 ft.
Transcontinental Oil Co. et al's No. 2 Sellman, 990 ft. from N and 2,310 ft. from E of Sec. 8, Blk. Z, T.C. Sur. ..... Drlg. 1,710 ft.
Trees Oil Co.'s No. 3 Trees, 330 ft. from S and W of Sec. 90, Blk. 8, H.&G.N. Sur. ..... Total depth 1,423 ft.; hole full sulphur water 1,305-12 ft.
W. F. Walsh et al's No. 1 Scharbauer Cattle Co., 330 ft. S and 990 ft. E from center, Sec. 16, Blk. 136, T.&St.R.R. Sur. ..... Location.
World Oil Co.'s No. 1-C University, 1,650 ft. from N, 990 ft. W, Sec. 7, Blk. 20, University Land ..... Set 10-in. casing 753 ft.; shut down 1,763 ft.

PRESIDIO COUNTY

Eastland Oil Co.'s No. 1 Tootle, C Sec. 17, Blk. 1, D.P. R.R. Sur. ..... Spudded; shut down.

REAGAN COUNTY

Big Lake Oil Co.'s No. 1-C University, 2,598 ft. S and 250 ft. W of NE cor., Sec. 1, Blk. 2, University Land.. Top pay 2,903 ft.; 1,000 ft. fluid in hole; top pay 6,807 ft.; shut down 8,430 ft.; hole is 2° off at 8,340 ft.
Big Lake Oil Co.'s No. 4-C University, 1,120 ft. from N and 1,096 ft. from E of Sec. 1, Blk. 2 ..... Showing oil and gas at 8,220 ft.; total depth 8,220 ft.; flowed an average 176 bbls. daily.
Texon Oil & Land Co.'s No. 2-B University, 4,655 ft. from S, 250 ft. from W, Sec. 36, Blk. 9 ..... Drlg. 5,873 ft.
Texon Oil & Land Co.'s No. 3-B University, 2,240 ft. from S, 920 ft. from W, Sec. 36, Blk. 9 ..... Drlg. 4,033 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Shut down 2,990 ft.
R. T. Hansford's No. 1 Williams, 150 ft. from S and W, Sec. 17, Blk. 6, H.&G.N. Sur. ..... Shut down 380 ft.
Black & Fink's No. 1 Brooks, 1,980 ft. N and 660 ft. W Sec. 16, Blk. 59 ..... Drlg. 1,710 ft.
Southern Crude Oil Pur. Co.'s No. 1 Kloh-Rumsey, 2,310 ft. N and W SE cor., Sec. 23, Blk. 51 ..... Show oil 3,410-20 ft.; shut down 3,575 ft.
David R. Thompson's No. 1 A. A. Eddins, Sec. 9, Blk. C-1 ..... Shut down 5,658 ft.

RUNNELS COUNTY

Gibson & Johnson's No. 1 Johnson, 2,310 ft. N and 1,650 ft. W of SE cor., Sec. 150, E.T.R.R. Sur. ..... Drlg. 1,165 ft.
Gibson & Johnson's No. 2 Serratt, 2,310 ft. from S and 1,650 ft. from E of Sec. 150, E.T.R.R. Sur. ..... Derrick.
George W. Boyce's No. 1 Lang, 2,310 ft. N, 6,900 ft. E, Sec. 262 ..... Show oil 2,028 ft.; running 8¼-in casing 2,360 ft.
McLean's No. 1 Clayton, 150 ft. from N line, 270 ft. from W line of Sec. 133 ..... Shut down 1,185 ft.; probably be abandoned.

SCHLEICHER COUNTY

Delmar Oil Co.'s No. 1 O'Harrow, C of NW, Sec. 56, Blk. 1, G.H.&S.A.R.R. Sur. ..... Underreaming 8¼-in. casing; total depth 2,635 ft.
Interstate's No. 1 Whitten, 1,320 ft. from N and W, Sec. 35, Blk. LL, T.C.R.R. Sur. ..... Cleaning out 5,954 ft.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,470 ft. from W, G.H.&S.A.R.R. Sur. ..... Underreaming 8¼-in. casing; total depth 2,270 ft.

SCURRY COUNTY

Byrd & Harmon's No. 1 Murphy, Jr., 330 ft. from N and E of Sec. 114, Blk. 97, H.&T.C. Sur. ..... Shut down 1,732 ft.
Camp Spring Oil & Ref. Co.'s No. 3 Guinn, 1,300 ft. from S, 300 ft. from E, Sec. 12, Blk. 3, H.&T.C.R.R. Sur. ..... Underreaming 6⅝-in. casing; total depth 3,900 ft.
I. B. Mimms et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C.R.R. Sur. ..... Spudded and shut down 300 ft.
G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ..... Cleaning out 4,325 ft.
E. L. Smith Oil Co.'s No. 1 Moore, 1,320 ft. from S and W, Sec. 379, Blk. 97 ..... Top salt 750 ft.; encountered 500,000 ft. gas 1,510 ft.; oil show 2,215 ft.; shut down 4,050 ft.
Transcontinental Oil Co.'s No. 1 Peckham, 330 ft. from S and W of R. N. Miller Sur. ..... Shut down 460 ft.

SUTTON COUNTY

Independent Oil & Gas Co.'s No. 1 Willson, Sec. 30, Blk. A, 1,650 ft. from N, 2,310 ft. from W. ..... Location.

TAYLOR COUNTY

Condor Pet. Co.'s No. 1 Allen, C of NW, Sec. 220, Blk. 64, H.T.C.R.R. Sur. ..... Fishing 1,077 ft.
A. H. Gibson et al's No. 1 Cody, 888 ft. N and 160 ft. W of SE cor. Lot 2, Sec. 18, Guadalupe County School Land ..... Spudding.
Gibson & Johnson's No. 1 Bingham, 330 ft. N and E of SW cor. their 270.8-ac. tract, Sec. 31, Guadalupe County School Land ..... Rigging up.
John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor., Sec. 46, Lunatic Asylum Land ..... Show oil 4,917 ft.; drlg. 5,390 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW, Sec. 155, Blk. D, M.-K.-T.R.R. Sur. ..... Shut down 1,285 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ..... Shut down 3,150 ft.
Mrs. J. B. McPhee's No. 1 Sam Belt, C Sec. 78, Blk. D-7, E.L.R.R. Sur. ..... Shut down 880 ft.; moved off machine.
Transcontinental Oil Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S, Sec. 26, Blk. 161, G.C.&S.F.R.R. Sur. ..... Drlg. 2,330 ft.
Woodley & Jones' No. 1 Pankenham, C SE NW, Sec. 43, Blk. B-2, C.C.S.D.&N.G.R.R. Sur. ..... Shut down 640 ft.

TERRY COUNTY

Atlantic et al's No. 1 Carlisle, 990 ft. from S and E of Sec. 58, Blk. E, E.L.&R.R. Sur. ..... Rigging up.
Kingsland Oil Prod. Co.'s No. 1 Brownfield, C NW SW, Sec. 7, Blk. 1-A, E.L.R.R. Sur. ..... Fishing baller 5,080 ft.

TOM GREEN COUNTY

Cannon et al's No. 1 Rust, 990 ft. S, 990 ft. W of NE cor. of Sec. 745 ..... Location.
Ellis et al's No. 1 Lewis, 450 ft. S and 150 ft. E of SE cor. of J.W. Sur. in Albert Black Sur., Sec. 75 ..... Show oil 428-43 ft.; shot 20 qts. 428-40 ft.; no results.
Fitzgerald & Taliaferro's No. 1 Bennett, C SW, Sec. 1,628, E. H. Ringer ..... Total depth 2,447 ft.; plugged back to 2,405 ft. to straighten hole.
Phillips Pet. Co.'s No. 1 Golden, 1,250 ft. from N and 1,583 ft. W of Sec. 77, James Webb Sur. ..... Location.
E. W. Wiley et al's No. 1 Maier, 200 ft. from E, 110 ft. from N, Sec. 6, Blind Asylum Land ..... Show oil 418-20 ft.; total depth 512 ft.

UPTON COUNTY

Cordova Union Land Co.'s No. 1 Fee, 330 ft. from S and E line of Sec. 1, Blk. 1, M.K.&T.R.R. Sur. ..... Location.
Eppenauer Drlg. Co.'s No. 1 Chaney, 2,310 ft. from N and 330 ft. from W of Sec. 18, Blk. 3, M.-K.-T. Sur.. Spudding.
Gulf Prod. Co.'s No. 3-B Hughes, 160 ft. N and 161 ft. W of most southerly SE cor. of their 200-ac. lease "B" out of Wm. Teer Sur. ..... Rig.
Pure Oil Co.'s No. 3 Hughes, 150 ft. S and 767 ft. E of NW of their 300 ac., Sec. 4, Wm. Teer Sur. ..... Partly rigged up; shut down 610 ft.
T. P. Coal & Oil Co.'s No. 1 Belcher, 1,320 ft. from N and 2,310 ft. from W line, Sec. 10, Blk. 4½, G.C.& S.F.R.R. Sur. ..... Drlg. 1,650 ft.; top salt 1,310 ft.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ..... Shut down 4,850 ft.
O. O. Owen's No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ..... Gas sand 2,491-2,520 ft.; tested 125-700 ft. gas; shut down 5,727 ft.
Phantom Oil Co.'s No. 1 Ingram, 175 ft. W of E line and 300 ft. N of S line, Sec. 44, Blk. D-8, E.L.&R.R. Sur... Show oil 1,535 ft.; shut down 2,551 ft.
Valvert Oil Corp.'s No. 1 Bassett, C NE, Sec. 47, Blk. Y.. Shut down 4,009 ft.

WARD COUNTY

Alpine Oil & Gas Co.'s No. 1 Dakan, 228 ft. from NE and 150 ft. from SE line, Tract 8, Sec. 11, Blk. 5, H.&T.C. Sur. ..... 1,000 ft. oil in hole; top pay 2,148 ft.; total depth 2,210 ft.; preparing to put on pump.
E. J. Anderson's No. 1 Johnson, 150 ft. N, 345 ft. E, Sec. 7, Blk. 32, H.&T.C.R.R. Sur. ..... Top salt 815 ft.; top pay 2,155 ft.; swabbing 20 bbls. day; total depth 2,200 ft.
Atlantic et al's No. 1 Dorr, 1,730 ft. S, 990 ft. W, Sec. 2, J. Howe Sur. ..... Drlg. 2,220 ft.
Atlantic and Delmar's No. 1 Hayzlett, 1,650 ft. from NE and NW of Sec. 17, Blk. 5 ..... Location.
Gulf Prod. Co.'s No. 3 Hutchins, 2,310 ft. from N and 330 ft. from W, Sec. 1, Blk. F, G.M.M.B.&A. Sur. .... Top salt 1,035 ft.; top brown lime 2,310 ft.; increase in gas 2,608-10 ft.; show oil 2,685 ft.; drlg. 3,004 ft.; 1,800 ft. oil in hole.
Gulf Prod. Co.'s No. 7 O'Brien, 320 ft. Sand W, Sec. 22, Blk. F, G.M.M.B.&A. Sur. ..... Hole full sulphur water 3,408 ft.; slopped over casing; total depth 3,566 ft.; plugged back to 3,025 ft.; preparnig to test; swedging 8¼-in. casing 2,280 ft.
Gulf Prod. Co.'s No. 3 Wristen Bros., 220 ft. NE of SW and 220 ft. SE of NW, Sec. 18, Blk. 5, H.&T.C. Sur. .. Show gas 1,960-70 ft.; filling up with sulphur water 2,520-27 ft.; salt water 2,545; plugged back to 2,477 ft.
Tex-Oil Production Co.'s No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 152, Blk. 34, H.&T.C.R.R. Sur. ..... Show gas 2,806-09 ft.; shot 20 qts. 3,245-75 ft.; drlg. 3,660 ft.; shot 120 qts. from 3,240-75 ft.; shut down 4,395 ft.
Penn and Atlantic's No. 2 Bennett, 2,310 ft. S line, 1,650 ft. W line, Sec. 16, Blk. 34, H.&T.C.R.R. Sur. ..... Top pay 2,347 ft.; total depth 2,630 ft.; plugged back to 2,625 ft.; swabbed 15 bbls. day.
Richardson et al's No. 1 O'Brien et al, 332 ft. from N and 360 ft. from W Sec. 5, Blk. F, G.M.M.B.&A. Sur.. Drlg. 422 ft.
Shell Pet. Corp.'s No. 1 Owens, located NE cor. of Sec. 16, Blk. 15, H.&T.C.R.R. Sur. ..... Top pay 2,886-93 ft.; increase at 2,909 ft. and 3,023-32 ft.; shot 90 quarts from 2,473-93 ft.; increase in oil 3,022-32 ft.; averaging 37 bbls. day; shut down 4,074 ft.; bit lost in hole.
Shipley et al's No. 4 Hayzlett, 2,050 ft. NW of SE and 2,420 ft. NE of SW line of Sec. 17, Blk. 5, H.&T.C. R.R. Sur. ..... Top salt 720 ft.; drlg. 2,595 ft.
Shipley et al's No. 5 Hayzlett, assume common line Secs. 16 and 17 is N and S, 220 ft. S and 1,910 ft. W, Sec. 17, Blk. 5 ..... Standard rig.
Shipley et al's No. 1 Monroe, 330 ft. SE SW, Sec. 3, Blk. 1 ..... Shut down 385 ft.
J. E. Smith's No. 1 Clement, 153 ft. SW of NE line and 153 ft. SE of NW line, Lot 7, Sec. 7, Blk. 32, H.&T.C.R.R. ..... Drlg. 310 ft.
Southern Crude Oil Purch. Co.'s No. 1 Harris, 1,458 ft. from N and 1,406 ft. from E of Sec. 30, Blk. B-19 ... Drlg. 2,175 ft.
Sturm & Paine's No. 1 Cummins, 748 ft. from NE and 155 ft. from NW of Sec. 7, Blk. 32, H.&T.C.R.R. Sur... Shut down 2,350 ft.; show oil and gas 2,170 ft.
Sun Oil Co.'s No. 2 Sealy, 330 ft. from N and E of Sec. 88, Blk. F, G.M.M.B.&A. Sur. ..... Drlg. 2,385 ft.

WINKLER COUNTY

A. W. Phillips' No. 2 Brown et al, 2,000 ft. S and W of NE, Sec. 4, Blk. B-5, Public School Land ..... Top salt 1,300 ft.; shut down 2,832 ft.; show oil 2,775-85 ft.
Cinderella Syndicate's No. 1 Hendricks, 330 ft. N, 1,650 ft. W, Sec. 42, Blk. 26, Public School Land ..... Total depth 150 ft.; rig.
Humble Oil & Ref. Co.'s No. 3 Wahon-B, 2,310 ft. S and W of NE cor. Sec. 47, Blk. 26, School Land ..... Drlg. 2,040 ft.
Liner Drlg. Co.'s No. 1 Campbell, 330 ft. from N and E cor., Sec. 2, Blk. B-5 ..... Top brown lime 2,510 ft.; shut down 3,685 ft.
Shell and The Texas Company's No. 1-B Cowden, 660 ft. from S and W of Sec. 39, Blk. B-5, Public School Land ..... Drlg. 1,790 ft.
Sun Oil Co.'s No. 1 Sealy, 2,310 ft. N line, 330 ft. from W line, Sec. 52, Blk. F, C.M.M.B.&A. Sur. ..... Drlg. 3,075 ft.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 84)

L. W. Timm's No. 2 Garnet (White Deer), 330 ft. S and W. NE cor., Sec. 104, Blk. 4, I.&G.N.R.R. Sur... S.D. 1,008 ft.

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 Slemmons, SW cor., Sec. 73, Blk. M-17, B.S.&F. Sur. ..... Rig blown down.
Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur. ..... S.D. 510 ft. for csg.

CHILDRESS COUNTY

Continental Oil Co. and Sun Oil Co.'s No. 1 Johnson, 660 ft. NE, Sec. 580, Blk. H, W.&N.W. Sur. ..... Running 15½-in. csg. 1,150 ft.
C. L. Sloane et als' No. 1 B. P. Smith, Sec. 49, F. P. Knott lands ..... T.D. 5,000 ft; C.O.

COCHRAN COUNTY

Westbrook et als' No. 1 Slaughter, 400 ft. S and E, Labour 67, League 118, Knox Co. School lands .... T.D. 5,036 ft.

COLLINGSWORTH COUNTY

Sharp Bros.' No. 1 Aldons, 410 ft. N, 330 ft. E, Sec. 96, Blk. 16, H.&G.N.R.R. Sur. ..... Run. 15½-in. csg; **T.D. 312 ft.**

DONLEY COUNTY

Blue Bonnett Oil Co.'s No. 1 Ball, 1,075 ft. N line, 985 ft. E line, Sec. 22, Blk. E, D.&P.R.R. Sur. .... T.D. 3,006 ft.; contract depth.
Marine Oil Co.'s No. 1 Sawyer, C SW, Sec. 5, Blk. G, G.C.&S.F. Sur. ..... Drlg. 3,875 ft.

GRAY COUNTY

Adams Oil Co.'s No. 4 Morse, 330 ft. S and W, NE cor., Sec. 3, Blk. 26, H.&G.N.R.R. Sur. ..... S.D. 2,495 ft.; S.O.
Baldridge & Lilley's No. 1 Melton, 330 ft. N and W, E½ SE, Sec. 95, Blk. B-2, H.&G.N.R.R. Sur. ..... Rig.
Camel Oil Co.'s No. 2-B Harrah, 330 ft. N and E, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,420 ft.
Cockrell-McIlroy Oil Co.'s No. 1 Castleberry, 330 ft. S and E, Sec. 126, Blk. 3, I.&G.N. Sur. ..... Rig on ground.
Constantine et als' No. 1 Crews, 330 ft. S and W, NE cor. SW, Sec. 20, Blk. 30, H.&G.N.R.R. Sur. ..... Shot 130 qts. 2,630-50 ft; T.D. 2,650 ft.

Danciger Ref. and Champlin Ref. Co.'s No. 4 Cook-Faulkner, 330 ft. S, 1,146 ft. W, NE cor. E 120 ac., W 210 ac., Sec. 30, Blk. B-2, H.&G.N.R.R. Sur... T.D. 1,980 ft.
Danciger Ref. and Champlin Ref. Co.'s No. 5 Cook-Faulkner, 330 ft. S, 706 ft. W, NE cor. E 120 ac., W 210 ac., Sec. 30, Blk. B-2, H.&G.N.R.R. Sur. ..... Set 15½-in. csg. 400 ft.
Danciger et als' No. 11 Jackson, 330 ft. S, 1,320 ft. W, NE cor. NW, Sec. 88, Blk. B-2, H.&G.N. Sur. ..... T.D. 2,906 ft.
Danciger O. & R. Co.'s No. 5 Morse, 330 ft. N and E, SW SW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. .... S.D. 2,505 ft.
Danciger O. & R. Co.'s No. 1 Shaw, 330 ft. S, 286 ft. E of E 39½ ac., NW, Sec. 5, Blk. 1, A.C.H.&B. Sur. .. T.D. 2,588 ft.
Danciger O. & R. Co.'s No. 1 Williams, 330 ft. N, 330 ft. E, S½ NW ..... Estimated 15,000,000 ft. gas 2,610-70 ft.; S.D. 2,720 ft.

Dixon Creek Oil Co.'s No. 1 Harrah, 330 ft. ea. way NW cor. SE NE, Sec. 150, Blk. 3, I.&G.N.R.R. Sur... Drlg. 1,410 ft.
Dunlop's No. 4 Morse, 330 ft. N and E, SW cor. SW, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ..... T.D. 2,431 ft.
Empire G. & F. Co.'s No. 1 Meer-B, 330 ft. S line, 990 ft. W line, SW, Sec. 106, Blk. 3, I.&G.N.R.R. Sur. .. Location.
Follet Pet. Corp.'s No. 1 Hood, 330 ft. S and W of W 80 ac., SW, Sec. 32, Blk. 3, H.&G.N.R.R. Sur. ..... Drlg. 556 ft.
Gardner Bros. and Collins' No. 2 Saunders, 955 ft. S, 330 ft. E of W 68 ac., E½, J. G. Eustice Sur. ..... Location.
Grallup et als' No. 1 Morse, 330 ft. ea. way, NE cor. SE, Sec. 3, Blk. 26, H.&G.N.R.R. Sur. ..... Drlg. 2,080 ft.
Gulf Prod. Co.'s No. 1 Barrett, 967 ft. N and E, SW cor. NE, Sec. 131, Blk. 3, I.&G.N.R.R. Sur. ..... S.D. 2,900 ft.
Gulf Prod. Co.'s No. 1 Bowers, 967 ft. N and E, SW cor. SE, Sec. 63, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 710 ft.
Gulf Prod. Co.'s No. 3 Worley-A, 330 ft. N, 1,650 ft. W, SE SW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. ..... S. D. 4,810 ft.
Haymer O. & G. Co.'s No. 1 Morse, 330 ft. ea. way out of SE cor. E½ SE, Sec. 45, Blk. A-9, H.&G.N. Sur. ..... T.D. 2,235 ft.
Herragan Oil Co.'s No. 1 Bradford, 330 ft. N, 990 ft. E, Sec. 123, Blk. B-2 ..... First S.G. 2,475-80 ft.; 15,000,000 ft. gas 2,515-40 ft.; S.O. 2,932-50 ft.; S.D. 3,140 ft.

Humble O. & R. Co.'s No. 1 Combs-Worley, 330 ft. S and W, N½ SE, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. .. S.G. 2,340-45 ft; and 2,420 ft; T. D. 2,800 ft; drlg. out plug.

Lenix et als' No. 1 Bradford, 330 ft. N and E, W½ SE, Sec. 118, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 150 ft.
Lyon et als' No. 1-A Morse, 330 ft. S and W, NW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ..... Rig.
Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W cor. SE, Sec. 200, Blk. B-2, H.&T.N. Sur. ..... Spudded and S.D.
Magnolia Pet. Co.'s No. 4 Harrah, 330 ft. ea. way, SW cor. NW, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. .... Drlg. 2,290 ft.
Magnolia Pet. Co.'s No. 1 Cubine, 330 ft. N and W, NE, Sec. 36, Blk. 25, H.&G.N.R.R. Sur. ..... Running 12½-in. csg. 901 ft.
Magnolia Pet. Co.'s No. 5 Magnolia, 990 ft. N, 330 ft. E, SW cor., Sec. 14, Blk. 3, I.&G.N.R.R. Sur. ..... Rigging up.
Magnolia Pet. Co.'s No. 4 Wright, 330 ft. N and W, SE cor. S½ SW, Sec. 13, Blk. 3, I.&G.N.R.R. Sur. .. Drlg. 2,115 ft.
Magnolia Pet. Co.'s No. 5 Wright, 330 ft. N, 752 ft. W, SE cor. S½ SW, Sec. 13, Blk. 3, I.&G.N.R.R. Sur. .. Drlg. 1,690 ft.
McAuley et als' No. 4 Morse, 330 ft. N and W, SE cor. NE, Sec. 2, Blk. 26, H.&G.N.R.R. Sur. ..... Rig.
McIlroy Oil Co.'s No. 1 Arnold, 330 ft. ea. way, NW cor. NW, Sec. 139, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,858 ft.
Mid-Continent Pet. Corp.'s No. 1 Laugham, 330 ft. S and W, W 231½ ac. of N 310½ ac., Sec. 1, Blk. B-2, H.&G.N. Sur. ..... Location.
Operators Royalty Co.'s No. 1 Eddington, 330 ft. ea. way, NE cor. NW, Sec. 34, Blk. B-2, H.&G.N.R.R. Sur. ..... S.D. 2,719 ft; S.G. 2,655-93 ft.
Oil Operators' No. 1 Bowers, 330 ft. N, 330 ft. E, Sec. 93, Blk. B-2, H.&G.N. Sur. ..... Show oil and gas 2,400-17 ft.; S.O. 3,036-55 ft.; first gas 2,483 ft. increase at 2,500 ft., 2,544 ft. and 2,950 ft.; S.D. 3,090 ft.

Prairie O. & G. Co.'s No. 2 Langham, 330 ft. S and E, NW cor., W 230.3 ac., of S 310.5 ac., Sec. 1, Blk. B-2, H.&G.N. Sur. ..... Location.
Phillips Pet. Co.'s No. 1 Wright-Wood, 330 ft. N, 990 ft. E, SW cor. N½ SW, Sec. 13, Blk. 3, I.&G.N.R. R. Sur. ..... Rig.
Phillips Pet. Co.'s No. 2 Wright-Wood, 330 ft. N, 990 ft. W, SE cor. N½ SW, Sec. 13, Blk. 3, I.&G.N. Sur... Rig.
Reynolds et als' No. 1 Webb, 330 ft. N, 330 ft. E, NW, Sec. 60, Blk. 25, H.&G.N.R.R. Sur. ..... Spudding.
Rieger & Steckoll's No. 1 Bohr, 339 ft. S and E, Sec. 37, Blk. B-3, H.&G.N. Sur. ..... Shutting off wtr. 3,395 ft.
St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor., Sec. 35, W. R. Lee Sur. ..... Spudded and S.D.
Stover and Shell's No. 1 Saunders, 990 ft. N, 330 ft. E, N 100 ac. of W 149 ac., Sec. 3, B.&B. Sur. ..... 2,000,000 ft. gas 2,670-75 ft; drlg. 2,715 ft.

Southern Expltn. Co.'s No. 1 Noel, 330 ft. S and W, W½ NW, Sec. 138, Blk. 3, I.&G.N.R.R. Sur. ..... T.D. 3,190 ft; 1,500 ft. oil in hole.
Sun Oil Co.'s No. 1 Combs-Worley, 330 ft. ea. way, SW cor. SE, Sec. 35, Blk. 3, I.&G.N. Sur. ..... Location.
The Texas Co.'s No. 1 Bell, 2,310 ft. N, 2,640 ft. W, Sec. 132, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 3,075 ft; 1,500,000 ft. gas 2,800 ft-2,910 ft.

The Texas Co.'s No. 15 Saunders, 330 ft. N and W, SE cor. W½ SE, Sec. 4, Blk. 1, A.C.H.&B. Sur. .... S.D. 2,610 ft.
The Texas Co.'s No. 1 Wright, 330 ft. S and W, SE, Sec. 13, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,180 ft.
Travis & Reiger's No. 1 Mackie, 330 ft. N and E, Sec. 114, Blk. B-2, H.&G.N.R.R. Sur. ..... 16,000,000 ft. gas; T.P. 2,685 ft.; rig burned 3,343 ft.
Travis et als' No. 1-B Webb, 330 ft. N and W, Sec. 61, Blk. 25, H.&G.N.R.R. Sur. ..... Swbd. 50 bbls. in 3 hrs; swbd. dry to shoot; T.P. 2,610-18 ft; shot 60 q.s. from 2,611-31 ft; 1,400 ft. oil in hole; S.D. 2,641 ft.

Tripplehorn Oil Co.'s No. 1 Morse, 330 ft. S and W, SW SE, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ..... Drlg. 2,805 ft.
Vulcan O. & G. Co.'s No. 1 Carpenter, 330 ft. N and W, W 80 ac., NW, Sec. 25, Blk. 25, H.&G.N.R.R. Sur. ..... T.D. 1,520 ft.; waiting on csg.
Wilson et als' No. 1 Heaston, 330 ft. S and W, Sec. 160, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 640 ft.
Wright Wilson, trustee's No. 1 Chapman, 175 ft. S and E lines, N½ NW, Sec. 69, Blk. 25, H.&G.N. Sur. ... S.O. 2,685 ft.; S.D. 2,693 ft.

HARTLEY COUNTY

Dana O. & G. Co.'s No. 1 Fritz, C NE, Sec. 81, Blk. 44, H.&T.C.R.R. Sur. ..... Drlg. 2,938 ft.

HUTCHINSON COUNTY

Alamosa Oil Co.'s No. 4 Sanford, 210 ft. S, 320 ft. W, NE cor. N 160 ac., S 240 ac., Sec. 85, Blk. 46, H, &T.C. Sur ..... S.O. and wtr. 3,010-11 ft; C.O. 3,095 ft.
Alexander et als' No. 1 Johnson, 1,709 ft. E, 330 ft. N, N 80 ac., E½, E. T. Tomlinson Sur. ..... Drlg. 1,050 ft.
Barnsdall Oil Co.'s No. 4 Prichard "A," C SW NW, Sec. 3, Blk. 4, D.&S.E. Sur. ..... Drlg. 2,854 ft.
Continental Oil Co.'s No. 1 Johnson-E, 330 ft. N and E, SW cor. SE, Sec. 5, Blk. I, B.&B. Sur. ..... Set 10-in. csg. 1,825 ft.
Danciger O. & R. Co.'s No. 1 Cheatham, 330 ft. N and E, SW SE, Sec. 38, Blk. Y, A.&B. Sur. ..... Drlg. 1,790 ft.
Danciger O. & R. Co.'s No. 3 Moore, 330 ft. S and E, NW W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. .... 1,000 ft. oil in hole; T.P. 3,003-20 ft.; S.D. 3,030 ft.
Danciger O. & G. Co.'s No. 4 Moore, 330 ft. N and E, SW cor. W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. Rigging up standard tools; T.D. 2,825 ft.

Dixon Creek Oil Co.'s No. 1 Cheatham, 990 ft. E, 330 ft. S, N½ SE, Sec. 38, Blk. Y ..... Drlg. 1,570 ft.
Dixon Creek Oil Co.'s No. 2 Cheatham, 330 ft. N, 1,650 ft. W, SE cor. N½ SE, Sec. 38, Blk. Y ..... Drlg. 620 ft.
Dixon Creek Oil Co.'s No. 1 Johnson Bros., 50 ft. S, 330 ft. W, NE cor. E 80 ac., J. Gammon Sur. ..... Drlg. 1,255 ft.
Gulf Prod. Co.'s No. 1 W. E. Herring, 1,320 ft. N, 1,395 ft. E, SW cor., Sec. 5, Blk. J, H.&G.N. Sur. .... Drlg. 1,962 ft.
Gulf Prod. Co.'s No. 1 Herring-A, 990 ft. S, 990 ft. W, NE cor., George Bazon Sur. ..... S.D. 1,300 ft.
Huey et als' No. 3 Smith et al, 330 ft. N, 660 ft. W, S 40 ac., E 100 ac., SE, Sec. 12, Blk. Y ..... Fishing 2,702 ft.
Midwest Explin. Co.'s No. 1-B Pitcher, 330 ft. E and S line, W½ SW, Sec. 19, T.C.R.R. Sur. ..... Drlg. 2,402 f.
Phillips Pet. Co.'s No. 2 Cheatham, 330 ft. S and E, NW cor. SE SE, Sec. 38, Blk. Y ..... Drlg. 2,016 ft.
Phillips Pet. Co.'s No. 1 Johnson-Burl, 330 ft. S and W, NE cor. W 240 ac., N 320 ac., Sec. 4, Blk. 1, B.&B. Sur. ..... Set 20-in. csg. 370 ft.
Phillips Pet. Co.'s No. 1 Johnson-Juanita, 330 ft. N and W, SE cor. W½, Sec. 5, Blk. I, B.&B. Sur. .... Set 10-in. csg. 1,982 ft.
Phillips Pet. Co.'s No. 1 Johnson-Trammel, 930 ft. N, 330 ft. W, SE cor. W½ NW, Sec. 38, Blk. Y ..... Drlg. 1,655 ft.
Phillips Pet. Co.'s No. 1 Johnson-Mayer, 990 ft. N and 990 ft. W line, NE, Sec. 37, Blk. Y, A.&B. Sur. .... Drlg. 1,485 ft.
Phillips Pet. Co.'s No. 1 Johnson-Royal, 330 ft. S and E, NW cor. E½ NW, Sec. 34, Blk. Y ..... Drlg. 1,102 ft.
Phillips Pet. Co.'s No. 1 Johnson-Rudy, 330 ft. W, 330 ft. S, SW SW, Sec. 30, Blk. Y, A.&B. Sur. ..... Set 10-in. csg. 1,912 ft.
Skelly Oil Co.'s No. 1 Byrd, 2,640 ft. E line, 3,960 ft. S line, W 3,094 ac., D. Luce Sur. ..... Drlg. 2,900 ft.
Spurlock et als' No. 1-A Christian, 440 ft. S, 330 ft. W, NE cor. SE SE, Sec. 33, Blk. Y ..... Drlg. 750 ft.
The Texas Co.'s No. 5 Moore, 330 ft. N and W, SE cor. SW, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ..... Rigging up.
Texarado Oil Co.'s No. 2 Sanford, 330 ft. S, 990 ft. W, NE cor. N 80 ac., S 160 ac., Sec. 83, Blk. 46, H.& T.C.R.R. Sur. ..... Drlg. 1,635 ft.

LAMB COUNTY

Graham O. & G. Co. et als' No. 1 Ellwood, CWL, Sec. 9, Blk. T. T. A. Thompson Sur. ..... Fishing 4,385 ft.

LIPSCOMB COUNTY

Brown et als' No. 1 Box T Ranch, SW NE, Sec. 612, H.&T.C. Sur. ..... Set 6⅝-in. csg. 3,700 ft; ready to start up.
Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ..... Fishing 4,954 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ..... Small S.O. 1,133-40 ft.; S.D. 4,167 ft.

MOORE COUNTY

Canadian River Gas Co.'s No. 1-C Sneed, 660 ft. N and E, SW, Sec. 46, Blk. 6-T, T.&N.O.R.R. Sur. ... Drlg. 2,120 ft.
Fritch O. & G. Co.'s No. 1 Lee Bivins, C N 40 ac., N 160 ac., Sec. 4, Geo. Mahan Sur. ..... 2,000,000 ft. gas 1,550-65 ft.; T.D. 3,212 ft.; S.O. 3,188 ft.; shot 40 qts. from 3,182-3,202 ft.; no results.

Gulf Prod. Co.'s No. 1 Kilgore, C SW, Sec. 22, Blk. P.Mc., E.L.R.R. Sur. ..... Drlg. 1,910 ft.
Operators Royalty Co. et als' No. 1 Jones, 330 ft. S line, 330 ft. E line, SW SW, Sec. 164, Blk. 3-B, T.&N.O.R.R. Sur. ..... Drlg. out plug 2,525 ft.
Red River Gas Co.'s No. 1 J. M. Shelton, 330 ft. ea. way from SE cor., Sec. 52, Blk. 3, G.&M. Sur. ..... Drlg. 2,694 ft.

MOTLEY COUNTY

Explin. Co.'s No. 6 Matador, 330 ft. N line, 330 ft. E line, Sec. 132, Blk. M ..... S.D. 4,011 ft.
Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ..... S.D. 580 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1-N Masterson, 330 ft. E, 1,320 ft. S, Sec. 17, Blk. 3, G.&M.R.R. Sur. ..... Rigging up rotary.

RANDALL COUNTY

W. A. Patterson's No. 1 Palo Duro, Sec. 60, Blk. K-14 .. S.D. 1,250 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. A-5 .... Shot 10 qts. 5,270-93 ft.; S.O. 5,288 ft; S.D. 5,992 ft.

TERRY COUNTY

Atlantic O. P. Co. et als' No. 1 Carlisle, 990 ft. S and E, Sec. 58, Blk. E, E.L.R.R. Sur. ..... Location.

WHEELER COUNTY

Dunaway Bros.,' No. 1 Worley, 330 ft. S and W, NE cor. NW, Sec. 39, Blk. 24, H.&G.N.R.R. Sur. ..... Drlg. 882 ft.
Lone Star Gas Co.'s No. 1 Brown, C NW NE, Sec. 53, Blk. 23, H.&G.N.R.R. Sur. ..... Location.
Lone Star Gas Co.'s No. 3 Linkey, 330 ft. S and W, NE cor., Sec. 106, Blk. 23, H.&G.N.R.R. Sur. ..... Drlg. 1,550 ft.
Lone Star Gas Co.'s No. 1 Ridinger, C NW NW, Sec. 65, Blk. 17, H.&G.N. Sur. ..... Rig on ground.
Wischkamper et als' No. 2 Brown, C SE NE, Sec. 53, Blk. 23, H.&G.N.R.R. Sur. ..... T.D. 400 ft.

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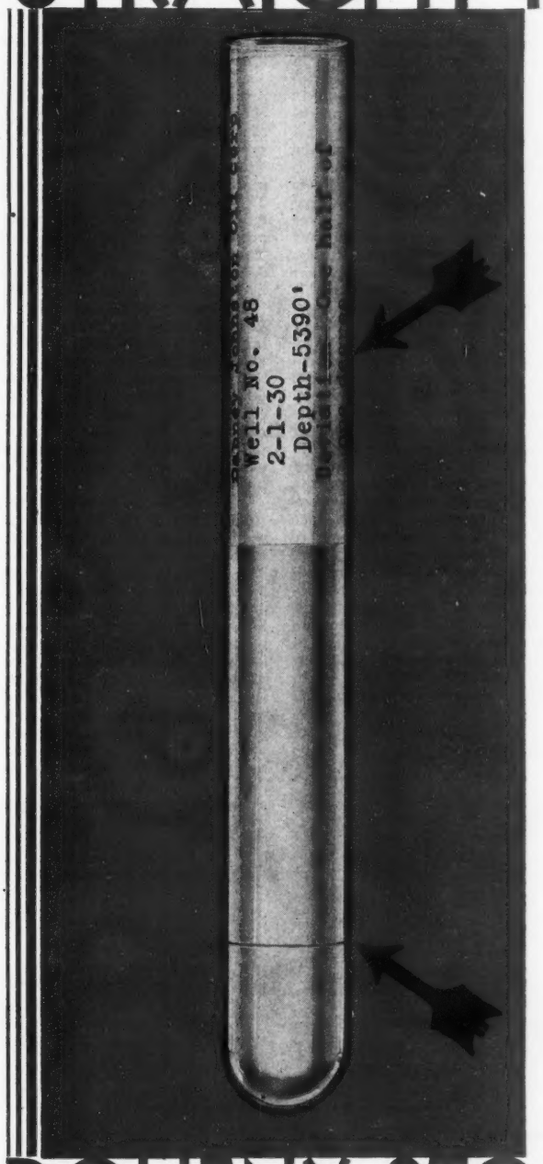

AT DEPTH of 5390 feet—deviation one half of one degree — reads this acid bottle, one of many from Dabney-Johnston Well No. 1 at Signal Hill . . .

Actual survey of this well at the 4,000 foot depth showed a total deviation of only 8 feet from the vertical . . .

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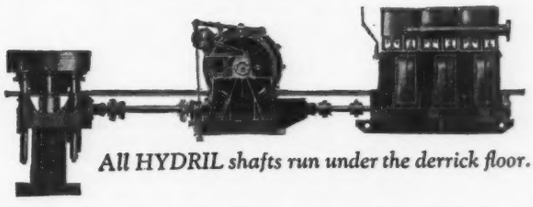

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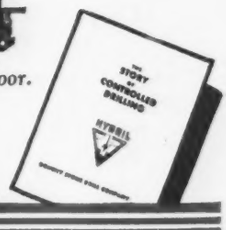

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Mechanics of a Production Curve

Analysis of the Problem Presented in California. Three Great Systems Distinct in Themselves. Type Reservoirs

By Stanley C. Herold
Petroleum Geologist, Los Angeles, Calif.*

Only two years ago there appeared in our technical magazines articles wherein it was shown that the application of back-pressure increased the ultimate production of a well, that edgewater can be stopped in its encroachment by the injection of gas into the productive formation, with the consquent conservation of energy within the pool, that gas is the source of all energy involved in oil production, and that each pool has a definite minimum-valued gas-oil ratio to be attained for the most economical operation of wells. Today we are not so certain of these matters. Probably in some fields, under special circumstances, these ideas are correct, but certainly they must not be correct in all fields, under any and all circumstances. The nature of the productive structure, the location of particular properties on the structures, the existence of adjoining neighbors, whether these are higher or lower on the structure, and the methods of production followed by all operators on the structure, sand for sand on depth, make these subjects worthy of full consideration.

Our difficulties in analyzing and comparing the performance of reservoirs in various parts of the world do not rest solely upon structural features and property lines. We do not complete the list of causes for these difficulties if we add lithologic features and correlation of strata encountered by the drill, with the magnitude of pressures exerted by fluids within any of these strata. A further cause, one of which I believe will complete the list, is one involving the theoretical mechanics of fluids within porous formations—porous in the nature of interstices in sandstones and some limestones, networks of fractures in shales, and cavities in otherwise compact limestones.

Three Systems of Control

The confusion of ideas concerning reservoir mechanics still with us today seems largely due to our failure to recognize among all wells three great divisions of theoretical mechanics, three great systems which are distinct in themselves, and according to which each well, or better, each group of wells, must be analyzed separately. These systems have been named by the writer Hydraulic Control, Volumetric Control, and Capillary Control, respectively.[1] Wells in these controls behave differently, and they must be handled differently, to get the best results in production practice, taking into consideration the other features of structure, property lines, lithology, correlations, pressures, and, in addition, any peculiar conditions displayed by the individual wells of any group—conditions that make them appear to be different from all other wells in the world.

If we will recognize the existence of these three controls, our problems in petroleum engineering will be simplified. Perhaps some engineers today will not agree that the introduction of theoretical mechanics into petroleum engineering is a lead to simplification. The author has known theoretical mechanics as a difficult subject for several years; consequently is inclined to be patient with those who complain about it, knowing that not yet is he himself 100 per cent proficient in it.

California Wells

So far as the author knows, all wells in California are in hydraulic or volumetric control.[2] These controls can be illustrated by tanks for liquids (reservoirs of the open type) and by tanks for gases (reservoirs of the closed type). Where a rate of inflow of fluid equal to the rate of outflow is provided in these tanks, there is hydraulic control, and where a rate of inflow is either zero or less than the rate of outflow, there is volumetric control. With these California wells for the present may be included any other wells in the world where the oil is produced from formations post-Cretaceous in age.[3]

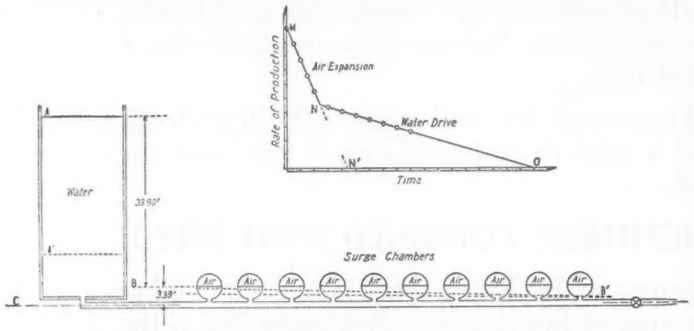


Figure 1—Water tank, flow line and surge chamber system, with production curve.

Back-pressures, offset wells and gas injection do not have the same effect in capillary control as in the other two controls. If we read articles written by engineers whose practice is confined to the Mid-Continent and Eastern fields, the features which they illustrate, and the methods which they find to be efficient, may be entirely inappropriate as applied to California fields. The reverse is equally true of the work of engineers in California as applied to Mid-Continent and Eastern fields.

Type Reservoirs

The principles of production are usually explained by means of illustrations or diagrams of artificial reservoirs—tanks either for liquids, for gases, or for both of these fluids. The reservoir may or may not contain sand to approach more nearly the situation as we know it to exist in many natural reservoirs. This method of expounding such principles is a good one, provided the proper sort of tank is used for the purposes of analogy. We cannot inspect in person all parts of a natural reservoir; we can only sense its characteristics at large by means of geological inference. Here it is easily possible to go wrong by selecting an improper type of tank for illustration.

A natural reservoir in California should be assumed to be a reservoir of the open type—one open to the atmosphere at some place other than at the well or wells where production is taking place—unless it can be proved by test in the field (and not by geological examination) that production comes from sealed lenses, or that the reservoir is one in capillary control. While these two exceptional situations may exist in this State, they may be ruled out for the present, in view of the fact that there is no absolute proof of their existence. From a geological point of view, the author accepts the fact that lenses exist in some of our formations. How well sealed they may be from a mechanical point of view is not known. It is certain, however, that most of our productive reservoirs in this State are reservoirs of the open type. Either the productive formation itself outcrops, or it is in communication with the surface by a fault or fault zone which reaches the surface directly or reaches a porous formation which does outcrop. The encroachment of edgewater upon the pool at large is a proof of this fact, for such encroachment cannot take place in a reservoir of the closed type—sealed lenses and reservoirs in capillary control, as mentioned, wherein such reservoirs are not open to the atmosphere at some place other than at the well or wells where production is taking place.

For the purposes of analyzing production in California, a tank system as shown in diagram in Figure 1 is offered for consideration. The surge chambers contain air before the tank is filled with water. With the valve closed at the right, and with the tank filled to A, the air in these chambers occupies one-half its previous volume; the water line stands along a line B.

The air in the chambers possesses energy —energy derived from the water that is compressing it. It has no mechanical energy that can be said to be intrinsically its own, for that which it has is due entirely to the water. If we should connect one or more of these chambers with an air compressor, the best we could do would be to increase the head by the amount B to C. Thereafter air would simply travel to the tank and escape through the water.

The air in the chambers can perform work, if given the opportunity to expand. In this capacity it may be said to act as an agent for the water, in as much as it expends energy which rightfully belonged to the water. To get this performance of work we can open the valve and allow production to take place. Now the air expands in each chamber according to a kinetic pressure gradient, the upper line at B' which in this tubular system is a straight inclined line. During this expansion we obtain data for the curve MN. It is a straight inclined line appearing to approach zero production at a point N'. During this expansion, A, if it moves at all, moves very little. As soon as the kinetic gradient is established the internal conditions of production change. No more work is performed by the air in the chambers; all work is now performed by the water; A lowers in accordance with production and B' lowers correspondingly with A. At a position A' we find a gradient such as the lower line at B'. The air in the chambers now expands only to accommodate itself to lowered pressures exerted by the head of water. The system produces solely by water drive, and the data of production give us the straight inclined line NO.

It is worth while emphasizing here the fact that mere expansion of air does not imply work performed. Air can expand without performing work. If it does work it loses heat and drops in temperature; otherwise it retains its heat. Heat energy converted into mechanical energy is a measure of the work performed. Many writers make the mistake of assuming expansion alone as a measure of work performed.[4]

A California Production Curve

In Figure 2 the line ABC represents the average of 127 producing wells in the Bixbee zone of the Long Beach Field. The curve is drawn from actual field data. AB appeared to approach zero production at November 25, 1928. It turned, however, to C in a direct line for zero production at June 6, 1929. In as much as the productive formation contains both oil and gas, and as the gas can act in the manner of the air in Figure 1, we are justified in claiming that AB represents production on gas expansion, where edgewater, if it moves at all, moves very little, and that BC represents the water-drive, where water is alone in causing production; consequently where edgewater must encroach upon the pool before the oil can be obtained.

There is a difference between the systems in the two figures to be fully recognized. Air in the surge chambers stays where it is during the process of production, expanding as already noted. Gas in the Bixbee zone travels toward the well. Though the surge-chamber effect applies as well to one system as to the other, the "chambers" in the natural system are within the zone itself. In either system, the expansive fluid at a fixed distance from the orifice attains a state of equilibrium in accordance with the kinetic pressure gradient (a quadratic hyperbola in the natural system), and whether it is

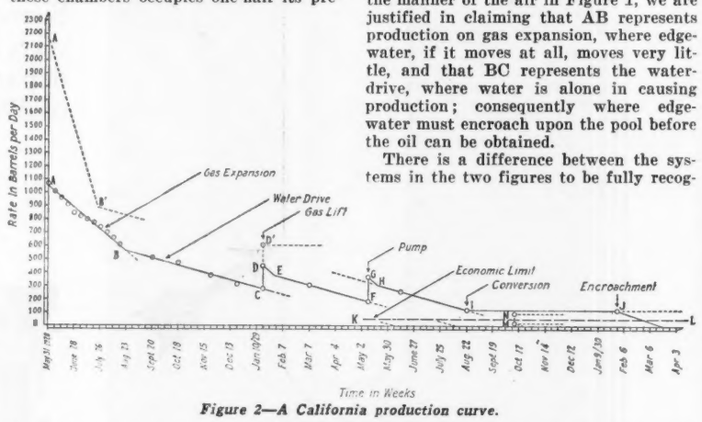


Figure 2—A California production curve.

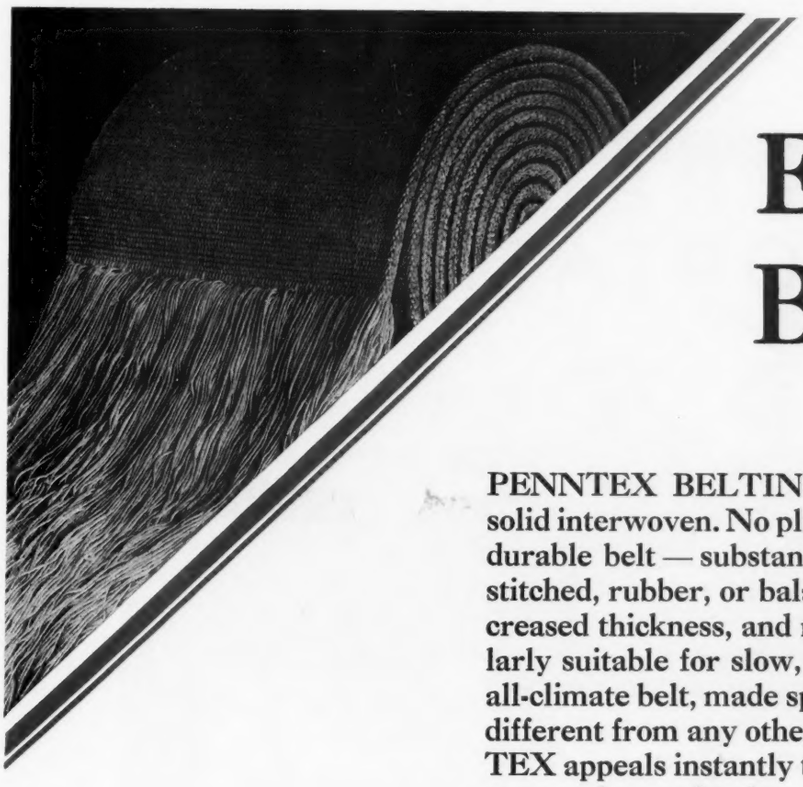
*Before A.I.M.E., New York. Copyright, A.I.M.E., 1930.

[1] S. C. Herold: Analytical Principles of the Production of Oil, Gas and Water from Wells. Stanford Univ. Press, 1928.

[2] Information at hand respecting Coyote Hills and Brea Canyon Fields indicate that these may be in capillary control. For the present, they should be considered as possible exceptions.

[3] Wells with production from the Cretaceous may be in any one of the three controls. This classification according to geologic age is offered only as a tentative one. The control is a feature in mechanics, and if there happens to be an alignment with a geological division, it is incidental. Older porous rocks are more compact, or more firmly cemented, and their surface exposures, when present, do not appear at elevations sufficient to furnish a fluid head capable of overpowering Jamin action in the compact formation.

[4] The gas-lift involves the expansion of gas. The mere expansion is not a measure of the work performed in lifting the oil, but the loss in heat suffered by the gas on expansion is such a measure.



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the same fluid or constantly new fluid which adjusts itself to this gradient makes no difference. Expansion takes place without the performance of work.

It must be admitted, of course, that a continual supply of gas will furnish the energy for a gas-lift if the wells are properly equipped for it. But we are considering here the mechanics of the reservoir interior up to and including the "orifice" at the bottom of the well and not the mechanics of any "heat engine"—which a gas-lift is—exterior to such an orifice, within the vertical hole of the well.[5]

At January 17, 1929, the conditions of production were gradually altered. Natural flow at many of the wells had reached an undesirable low point, and one well after another was placed on gas-lift. On account of the erratic nature of the subsequent data of production, the author has chosen to use imaginary data after the point C was reached, considering all wells to be treated simultaneously alike. The lift raised the curve, we will say, to D. This established a new condition for the surge chambers within the zone; the gas was able to expand and perform work once more, in order to establish a new kinetic gradient. The production curve takes a path DE parallel to AB, where it meets at E a line EF parallel to BC, whose position is determined by observation on March 7.

Gas Injection

If we suppose gas injection to have been installed at the time the wells were placed on lift, the rate would have been raised to some point D′, and if the injection is properly regulated a horizontal straight line out from D′ is for a time possible. By connecting the surge chambers in Figure 1 with a compressor, we can raise temporarily the rate of flow from the orifice, because of friction in the line from the tank. Clearly our line would soon fill with air and we would get no more water. The same thing seems to happen in a system such as the Bixbee zone. We would fill the zone with injected gas and eventually cut off the oil. We would in the first system hold back the water in the tank and in the second likewise hold back the edgewater. It is easy to see, of course, that by holding the edgewater those wells in the zone located just within the edge of the pool are maintained in oil, whereas they would otherwise go to water.

Location on structure with respect to neighboring properties plays an important role in the case of injection in this State. If there are no neighbors, no losses are suffered by injection; all is on the credit side on account of an increased rate of production from the output wells. But in Long Beach all operators have neighbors.

Where wells are producing from reservoirs of hydraulic and volumetric controls, the gas is free to slip around through the zone in accordance with any upward trend of the formation on structure. The injection of gas on the top of the structure places large bubbles at the top, and these, of course, tend to remain there. On the other hand, gas that is injected on the flank of the structure tends to move up to the top, being aided in its movement by radial flow toward all wells in the zone. It is possible to sum up the consequences of injection in reservoirs of this type as follows:

Location on Top of Structure.—Replacement of oil by gas in the zone underlying the property. Maintenance of edgewater down the flank so that neighbors stay in oil. Loss of gasoline by injecting gas sufficient to extend to adjoining wells. Increased rate of production from output wells.

Location Down the Flanks of Structure.—Creep of injected gas upward, carrying its gasoline, to the neighbors on the crest. Maintenance of edgewater off property lines. (Important in edge properties.) Increased rate of production from output wells.

Obviously it is a proposition of "give and take" in either case. It is impossible to say offhand whether or not the gains offset the losses with a particular piece of property. If we have the data of production before and after injection, with the data of injection itself, also the contour map of the zone, showing the respective property holdings, it seems that a satisfactory conclusion concerning profits and losses incurred by injection can be deducted.

The Clean Up

In considering the zone as a unit, disregarding property lines within its area, all gas supposedly stored by injection within the productive horizon must come out before the zone is finally abandoned as depleted. Water must be allowed to replace the oil of the pool. Nature is flooding the formation for us. She sweeps the oil horizon clean—cleaner than many of us familiar with the conditions in capillary control are ready to believe. If we attempt to replace oil with gas we can not sweep the horizon clear. Globules of oil will remain within the formation. (The author's estimate is 20 per cent of the pore space to remain filled with oil.) With water there are no globules left behind. The grains remain "painted with oil," but this paint is not liquid, any more than the paint on a house. It is held to the grains by absorption; its presence is never reflected in the production curve, for it does not move toward and out of the well.

Pumping the Well

Returning to Figure 2, we may imagine production to proceed to F, where the pumping stage is reached. While the gas-lift removed only a part of the weight of the oil column off the bottom of the hole, a pump can be arranged to remove more, if not all of this weight. The process at CDE is now repeated to FGH. An observation on June 13 establishes the position of HI.

Conversion of Control

If, in Figure 1, we were to provide an inflow of water at the top of the tank, A would immediately proceed to move upward or downward and assume a level where the rate of outflow just equals this rate of inflow. A system previously declining in volumetric control thus is converted to one which does not decline in hydraulic control. Where the curve of production changes from a straight inclined line to a straight horizontal line there is a point designating a "conversion of control."

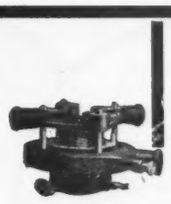
The Bixbee zone is in communication with the surface—exactly where, it is not possible to say.[6] Presumably water can and does enter the zone from the surface, as it is known to do at the Kern River Field. Then at some point I or M on the production curve, the rate of production will travel along a straight horizontal line, conforming to a conversion of control. The total rate from the zone will just equal the rate of inflow. If winters are comparatively dry the rate will be lower, and if they are wet, the rate will rise, as it does in the Kern River Field.

It is not suggested that such a conversion has already happened at Long Beach, Bixbee zone. Perhaps D and G are too low, placing I and M too far to the left according to the dated axis. Subsequent to C the curve has been entirely imaginary. Of course, any inadvertent shifting of dates will not affect the present argument.

It cannot be said in advance whether the conversion will take place at I, above a line KL representing the economic limit of production, or at M, below such a line, because the rate of inflow is not known. To determine the fact we must await observation on the behavior of the well. If the curve does not proceed to the axis, as shown on October 24, we can be assured that there is conversion, and the observed rate gives the position of the horizontal line. If the point of conversion is below KL, the remedy is simple. We need only shut in all wells except a few at the crest of the structure, raise the rate in this manner from M to N,

[5]Engineers are now recognizing the fact that the gas-lift is a mechanism apart from any directly related to the theoretical mechanics of the natural reservoir, and that the two features must be analyzed and considered separately in the field.

[6]A measurement of the closed-in pressure when the zone was first put on production would have given the location with respect to elevation above the sea. This elevation might have given some clue as to the probable geographic location.



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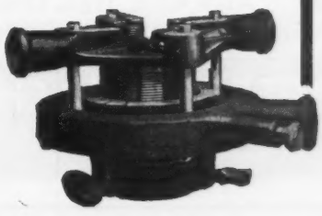

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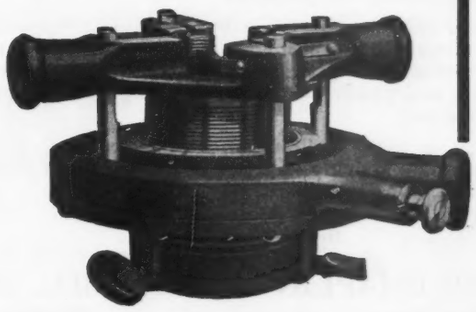

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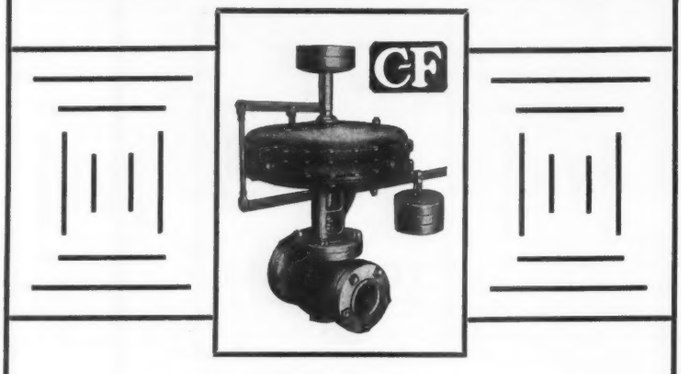

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and take out the remainder of the oil in the pool.

The pool diminishes in size to the last; water continually advances. Even top wells must eventually show edgewater. At J it is shown to have reached a stage near the finish. More and more water comes to the well; in the end an inclined line (not necessarily straight as represented) reaches KL and we are finished with the zone. For the Bixbee zone, such a point as J, whether on the elevation of I or N, should more properly be placed 10 years or so to the right of the position shown.

It is on this horizontal line representing the final cleanup that all gas once injected into the zone comes out to allow replacement by water.

With injection, as at D', the curve of production becomes somewhat erratic, for nature is thrown off her intended path. In the final stage the line KL is reached sooner but the curve is held higher. The area subtended by the curve is the same with or without injection, since this area represents oil taken out of the pool.

We have not made oil by raising the curve; we have realized profit at a greater rate, and this is not to be ignored. The ultimate production is not affected by injection.[7] We dodge the economic limit when we come to it. It is safe to assume that the few barrels of oil finally left in the zone will be the same in number whether injection is or is not used.

Raising the Curve

If areas subtended by curves represent oil taken out, we should, in the presence of neighbors, raise our curve as soon as possible, taking into consideration all the economic questions necessarily involved. Truly, nothing is gained on our neighbors if we all do the same thing with our wells—we only change our rate of income when we act in unison. If a representative well in Figure 2 were placed on the pump in the beginning the curve would be something like A'B'HI. B' lies to the left of B, for the action of the water-drive would come sooner. Correspondingly, any back-pressure applied to the well by flow-nipples would lower AB, make it flatter, and place B' to the right of B. (This feature is not shown in the figure.) It is apparent that we should not hold our curve on AB while neighbors are holding theirs to A'B'; or that we should not hold our curve below AB by back-pressure while neighbors are holding theirs to AB.

As with gas-lifts and pumps, back-pressures do not affect the ultimate production from the zone. They only extend the point J farther to the right, meanwhile permitting other wells to produce a greater portion of all the oil in the zone.[8]

Ultimate Production

The ultimate production from any particular well is one thing, being dependent on its location on structure and the production methods employed at all wells in the zone, while the ultimate production from the entire zone is quite another thing.

It is supposed that, in as much as a structure is not of perfect geometrical design, roof pockets will exist here and there, perhaps between wells, and if this is the case, injected gas will dislodge any oil in them and shove it to the well. Undoubtedly such pockets exist; any oil they may have had has been replaced already by gas which has been liberated from solution on the decrease of pressure in accordance with a kinetic pressure gradient established by the adjoining wells during the period represented by AB in Figure 2.

Gas-oil Ratios

A great deal has been written and said about gas-oil ratios of late. The significance of those ratios may be one thing in California and other fields wherein a water-drive is substituted for gas expansion, and another thing in the Mid-Continent and Eastern fields wherein gas expansion is the exclusive agent of propulsion.[9] In view of the foregoing analysis of a production curve in California, the author offers the following interpretation of gas-oil ratios applicable here, realizing that the picture as presented may not be complete, and in consequence may not be exactly fair. The subject is a complicated one, and all facts concerning it cannot be learned in a brief time.

During the period of gas expansion, gas-oil ratios are of importance. If this gas were allowed to escape, AB would be inclined more steeply, B would be located on the same line BC extended to the left of the position shown. The water-drive would come into action sooner, and the area under a definite portion of the curve such as ABC would be smaller, representing less oil produced previous to January 17. During the water-drive gas-oil ratios have no significance to which any value may be attached.[10] During the gas-lift stage they have no significance except the one requiring the addition of more gas for the lift in case of deficiency. During the pumping stage they have no significance except for the fact that the gas must be bled off in case of an excess, so that oil can enter the pump chambers properly.

Finally, during injection, gas-oil ratios have a significance of value. They show how much gas there may be injected in excess of that actually needed. They indicate how much gas is being "stored" temporarily in the productive zone, to be drawn off at a later time.

A Test in Mechanics

As stated in the beginning, this problem concerning the mechanics of a California production curve as here presented depends on the fact that the zone constitutes a reservoir of the open type. Long Beach, Santa Fe Springs, Dominguez, Kern River, Coalinga, Kettleman Hills and Ventura Fields have reservoirs which are undoubtedly of this type. For possible exceptional cases the following test is suggested, in case determinative data are not already at hand:

Pump up the reservoir at one well with gas, stopping pumping operations from time to time in order to allow an attached pressure gauge to come to rest. (Incidentally note any changes in pressure at adjoining wells which should be closed.)

1. If the curve obtained by plotting pressure against volume pumped in is a straight horizontal line, the reservoir is of the open type.
2. If such a curve is a straight inclined line, the reservoir lies within a lens which is entirely sealed from a mechanical point of view.
3. If such a curve is a parabola, the reservoir is one in capillary control.

In making such a test we should allow for an erratic behavior in the beginning of operations. We may increase the head a little in case 1 by shoving the free surface of oil down the structure, a phenomenon corresponding to an increase of head from B to C in Figure 1. Again, we may set up a high resistance due to Jamin action in the vicinity of the well, by filling an excess of pores with gas. Beyond a reasonable distance the introduced gas pushes oil against bubbles already existing within the formation, compressing them without adding to their number.

Forecasting Production

Well records in California frequently show a general feature like the bend in the curve-section ABC. Such a bend may not be sharp at B. Perhaps the gas-lift action is undergoing a change which gradually increases the weight of the vertical column of oil bearing on the bottom of the hole, tending to round off the bend. At other times we deliberately round off corners of curves by eye, with the idea of averaging the situation.

It frequently happens that the progres-

[7] Injection does affect the ultimate production from wells in capillary control, and injection in this case would be termed more correctly "a forced drive by gas."

[8] Statements in this paragraph must not be construed as applicable to wells in capillary control.

[9] This is a fundamental difference between reservoirs of the open and closed type respectively; that is, between hydraulic and volumetric controls on the one hand, and capillary control on the other. If there are mechanically sealed lenses these are of the closed type, but in volumetric control. Gas-oil ratios have more or less the same significance here as in capillary control.

[10] As before, the gas-lift is considered as a problem apart from the problem of the reservoir. In the gas-lift the ratios have continual significance.

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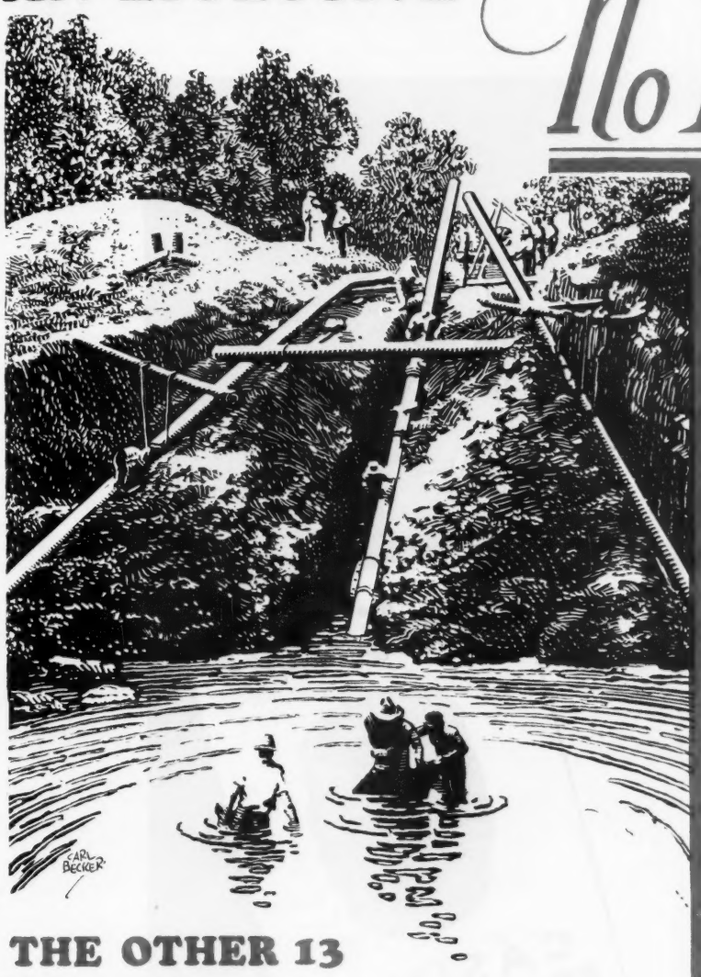

it must be WATERPROOF and remain so

Obviously, a protective coating must be waterproof to exclude all soil solutions, and practically all coatings *are* waterproof when first applied. But, like a raincoat, certain types of coatings lose their waterproof qualities with age. Some such coatings contain water to start with. Others leach through evaporation of the essential oils, grow brittle and crack. Thus, they lose all value as protective coatings because even a very little water which penetrates to the steel will corrode it, the corrosion will progress and will push off the remaining portions of the coating. It is therefore essential to use a protective coating which is waterproof to start with, which undergoes no changes and retains its waterproof qualities for many years.

Bitumastic Enamel is not only waterproof, but it is absolutely stable. It contains no water or solvents and will not absorb them because it never becomes porous. It will not crack, check, peel or blister. During more than forty years of use it has definitely proved in hundreds of applications that it retains its original waterproof qualities without apparent diminution.

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2. be unaffected by external chemical influences.
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sive development of a new zone, especially where property holdings are small, causes AB to fall more rapidly than otherwise it would. The section of the curve in this case is not solely reflecting the surge-chamber effect. The drop due to new wells is one that would take place in the complete absence of gas.

The records of many wells in this State show an unbent straight line. We can only decide here between sections AB and BC according to the gas content of production with oil.

The lifting of the curves by gas-lift and pump should not be ignored in forecasting. The section of the curve from B to I should not be smoothed out; it would be better to raise the curve abruptly, parallel to itself.

The production curve method seems to be entirely appropriate so long as conversion to hydraulic control has not taken place. Forecasting after conversion must be done by means of the contour map with data on encroachment up the flank.

The entire curve from A to J if entirely smoothed out would approach the appearance of a hyperbola, except for the cutting of the axis on the left. The use of a hyperbolic equation, and the use of an exponential equation as well, for the purpose of forecasting is proper, but only so on account of convenience. It must not be supposed that either the hyperbola or exponential curve has any significance pertaining to the mechanics of production.

In forecasting production from any group of wells, considerably more weight should be given to recent data than to earlier data. Sometimes it is preferable to ignore the earlier data completely. We have relied too strongly upon the idea of a "family curve" of production. The curve undoubtedly has some significance, but not the universal significance frequently attributed to it in the past.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 63)

Triangle Drlg. Co.'s No. 1 Kilpatrick, 660 ft. S, 660 ft. E. NW cor. SW NE, Sec. 7-19-5 ..... T.D. 4,558 ft; same amt. gas, oil and S.W; std. 2,000 ft. fluid; W.O.

CONCORDIA PARISH

Joe Man et als' No. 1 Maxwell, C, Sec. 35-3n-8e ..... S.D. account of high wtr; T.D. 400 ft.

DE SOTO PARISH

Benson Oil Co.'s No. 1 Harris, Sec. 6-10-13 ..... Tested dry; show gas; W.O. 3,650 ft.

R. O. Roy's No. 1-B Farmer, 660 ft. S, 660 ft. E, NE SW, Sec. 18-13-13 ..... Derrick.

R. O. Roy's No. 1-E Farmer, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 5-13-13 ..... Drlg. 6⅝-in. plug; T.D. 2,765 ft.

FRANKLIN PARISH

Davis et als' No. 1 Moore, 600 ft. W, 200 ft. S, NE cor., Sec. 12-11-6 ..... S.D. 1,430 ft.

Evansville Inv. Co.'s No. 1 W. B. Welch, 945 ft. E, 511 ft. N, SW cor., Sec. 2-14-8 ..... S.D. 3,030 ft.

Franklin O. & G. Co.'s No. 1 T. J. O'Brien, 300 ft. N, 300 ft. E, SW cor. NW, Sec. 17-15-9 ..... Cmtd. 10-in. 908 ft; drlg. 1,600 ft.

NATCHITOCHES PARISH

S. D. McDaniel's No. 2 Clark & Morse, 800 ft. E. 350 ft. N. C, Sec. 23-5-6 ..... Tested 1,000,000 ft. gas and S.W. 3 ft; S.D. for orders; T.D. 2,536 ft.

Nichols & Wilder's No. 1 Clark, 150 ft. W, 250 ft. N, SE cor., Sec. 10-10-8 ..... Top Blossom 2,804 ft; cored S.W. sand and S.D; T.D. 2,820 ft.

Robeline O. & G. Co.'s No. 1 Winn, 558 ft. N, 348 ft. E, SW cor. SE, Sec. 7-8-9 ..... S.D. 1,600 ft.

OUACHITA PARISH

J. L. Bullock, trustee's No. 1 W. Va. Lbr. Co., N½ NE, Sec. 25-18-5 ..... S.D. account of high wtr; T.D. 2,700 ft.

RAPIDES PARISH

Ayers Bros.' No. 1 Wickliff, 2,790 ft. N, 150 ft. E, SW cor., Sec. 9-5n-2e ..... S.D. for fuel 2,650 ft.

Jordan Drlg. Co.'s No. 6 Cole, 1,596 ft. W, 2,388 ft. N, NE cor., Sec. 49, in Sec. 80-18-4e ..... Location.

Jordan Drlg. Co.'s No. 2 Perebrook, 1,207 ft. W, 264 ft. S, C, Sec. 9-18-4e ..... Location.

Jordan Drlg. Co.'s No. 1 School Board, 216 ft. S, 244 ft. W, NE cor. NW, Sec. 16-18-4e ..... Location.

RED RIVER PARISH

W. D. Ball's No. 1 Krumholtz, 660 ft. S, 660 ft. E, NW cor., Sec. 32-14-10 ..... S.D. account high wtr. 1,550 ft.

LeGrande et als' No. 1 Sample, Sec. 11-14-11 ..... Rigging up.

RICHLAND PARISH

Austin & McDonald's No. 1 Hunt, 594 ft. N, 660 ft. E, SW cor., Sec. 13-17-5 ..... Derrick.

Austin & McDonald's No. 2 Millsaps, SW cor., Sec. 17-17-6 ..... Waiting orders; T.D. 2,679 ft.

Austin & McDonald's No. 3 Millsaps, 1,980 ft. S, 660 ft. E, NW cor., Sec. 16-17-6 ..... Tested S.W; W.O. 2,477 ft.

Austin & McDonald's No. 4 Millsaps, NW cor., Sec. 16-17-6 ..... Location.

Austin & McDonald's No. 5 Millsaps, 2,640 ft. N, 1,320 ft. W, SE cor., Sec. 8-17-6 ..... Derrick.

W. C. Feazel's No. 1 Landrum, 620 ft. N, 4,573 ft. E, SW cor., Sec. 6-16-7 ..... Derrick.

Industrial Gas Co.'s No. 1 T. R. Hodge, 3,259 ft. E, 1,320 ft. S, C, Sec. 7-16-7 ..... Fishing 3-in. drill stem; T.D. 2,874 ft.

Industrial Gas Co.'s No. 1 A. T. Davidson, 1,350 ft. S, 916 ft. E, NW cor., Sec. 6-16-7 ..... S.D; W.O. 2,762 ft.

Industrial Gas Co.'s No. 1 Ruston Drlg. Co., 1,930 ft. S, 1,955 ft. E, NW cor., Sec. 7-16-7 ..... S.D; W.O. 2,636 ft; igneous rock.

Richland O. & G. Co.'s No. 1 Singleterry, 1,930 ft. N, 660 ft. W, SE cor., Sec. 20-18-7 ..... Cmtd. 9-in. csg. 970 ft.

Shreveport Contractors, Inc.'s No. 1 Buie, 600 ft. E, 400 ft. N, SW cor., Sec. 17-15-7 ..... S.D; shale and boulders 2,527 ft

SABINE PARISH

Bridges-Clark Oil Co.'s No. 1 Gay et al, 300 ft. S, 300 ft. E, NW cor. NE NW, Sec. 3-9-12 ..... Drlg. 3,215 ft.

Bridges-Clark Oil Co.'s No. 1 McWilliams, 330 ft. S, 330 ft. E, NW cor., Sec. 30-10-11 ..... Drlg. 2,500 ft.

R. L. Gay, trustee's No. 7 Bowman-Hicks, 330 ft. N, 330 ft. W, SE cor. NE SW, Sec. 14-7-14 ..... Derrick.

R. L. Gay, trustee's No. 8 Bowman-Hicks Lbr. Co., 330 ft. N, 330 ft. W, SE cor. NW SW, Sec. 18-7-13 .... Derrick.

R. L. Gay, trustee's No. 4 Sabine Lbr. Co., 330 ft. N, 330 ft. E, SW cor., Sec. 13-7-14 ..... Derrick.

G. M. LeGrand's No. 1 A. C. Haley, 1,020 ft. N, 3,300 ft. E, NW cor., Sec. 6-7-12 ..... No test; show S.W. in ditch; arranging to plug back; T.D. 2,576 ft.

Lohman et als' No. 1 Wyatt Lbr. Co., 150 ft. S, 330 ft. E, NW cor. NE SW, Sec. 18-4-11 ..... Derrick.

Paramount O. & G. Co.'s No. 1 Wootema, 330 ft. N, 330 ft. W, SE cor. NE NW, Sec. 11-6-12 ..... Derrick.

Pelican O. & G. Co.'s No. 1 La. Long Leaf Lbr. Co., 215 ft. N, 30 ft. E, SW cor. NW SE, Sec. 4-7-11 .... Derrick.

Pelican O. & G. Co.'s No. 1 Sabine Lbr. Co., 330 ft. S, 330 ft. E, NW cor. NE SW, Sec. 1-7-12 ..... Rig up.

Ray-Dawes Drlg. Co.'s No. 1 Mansfield Hdw. Lbr. Co., Sec. 36-8-13 (no check) ..... Derrick.

W. F. Lacey et als' No. 1 Knouse, 60 ft. N, 111 ft. W. SE cor. NE SE, Sec. 36-8-13 ..... Location.

D. H. Riddick's No. 1 Scretchfield, 400 ft. E, 400 ft. N, SW cor. NW SE, Sec. 18-9-12 ..... S.D. 2,300 ft.

A. H. Tarver's No. 2 Long Bell, 800 ft. N, 800 ft. W, SE cor. SW, Sec. 18-8-13 ..... Arranging to kill S.W. test in Blossom sand; T.D. 2,335 ft.

TENSAS PARISH

A. R. Willis et als' No. 1 Curry, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 ..... S.D. 600 ft.

UNION PARISH

Bahan & Bahan's No. 1 J. West, 660 ft. N, 660 ft. E. SW cor. SE, Sec. 33-23-3 ..... D.S. test; dry 2,348 ft; drlg. 2,430 ft.

Interstate Nat. Gas Co.'s No. 26 fee, 2,970 ft. S, 660 ft. E, NW cor., Sec. 33-23-3 ..... Drlg. 2,300 ft.

Fred Stovall's No. 1 Stovall, 1,820 ft. E, 350 ft. N, SW cor., Sec. 32-23-4 ..... Rig up.

E. W. Bateman's No. 3 Womble, 200 ft. S, 660 ft. E, NW cor. NW SW, Sec. 1-22-11 ..... Location.

WEBSTER PARISH

F. M. Fuller's No. 1 Monzingo, 200 ft. N, 200 ft. W, SE cor., Sec. 27-18-8 ..... Began drlg. Nov. 10; cmtd. 10-in. 62 ft.

Paul C. Warren et als' No. 1 Martin, 305 ft. N, 212 ft. E, SW cor., Sec. 20-20-9 ..... Dry and abd. 2,171 ft.

WEST CARROLL PARISH

H. L. Hunt, Inc.'s No. 1 R. E. Brown, NW cor. NW SW, Sec. 4-21-11 ..... Set 10-in. 162 ft; drlg. 1,595 ft.

Palmer Corp.'s No. 1-A Marston, 1,320 ft. S, 89 deg., 35 min. W, 1,320 ft. of SE cor., Sec. 11-19-10 ..... Fishing D.S.; S.D. 2,675 ft.

ARKANSAS

ASHLEY COUNTY

Ark. Fuel Oil Co.'s No. 1 Crossett Lbr. Co., 330 ft. E, 330 ft. S, NW cor., Sec. 1-19-7 ..... Drlg. red shale 3,570 ft.

CLEBURNE COUNT

Cosden Oil Co. of Ark.'s No. 1 Donophan, 100 ft. S, 660 ft. E, NW cor. SW SE, Sec. 19-9-10 ..... Drlg. sandy lime 2,150 ft.

Donnelly-Craver et als' No. 1 Doniphan Lbr. Co., SE cor. NW, Sec. 33-11-9 ..... Began drlg. Dec. 30; S.D. 60 ft. account cold weather.

COLUMBIA COUNTY

Parker et als' No. 1 Franks, 330 ft. S, 330 ft. W, C, Sec. 25-19-22 ..... S.D. 2,835 ft.

Williams et als' No. 1 Fullenwider, 200 ft. N, 600 ft. E, SW cor. NE SE, Sec. 12-17-22 ..... Rigging up.

DREW COUNTY

McClintock & Goodka's No. 1 Ogles, 920 ft. W, 400 ft. S, NE cor., Sec. 35-13-5 ..... S.D. repairing rig 1,810 ft.

FAULKNER COUNTY

Gold Creek O. & G. Co.'s No. 2 Stermer, SE cor. NW SE, Sec. 17-4-13 ..... Began drlg. Dec. 12.

GARLAND COUNTY

Givens et als' No. 1 Garrett, 660 ft. S, 660 ft. W, C, Sec. 1-3-19 ..... Drlg. 3,604 ft.

LITTLE RIVER COUNTY

A. L. Buck's No. 1 Greason, NW NW, Sec. 25-12-32 .... Drlg. 2,335 ft.

McDonald & Shaw's No. 1 W. E. Black, 240 ft. N, 450 ft. W, SE cor. SE NE, Sec. 12-13-28 ..... S.D. 1,965 ft.

LOGAN COUNTY

M. W. Greeson's No. 1 C. S. Parke, 330 ft. N, 330 ft. W, SE cor., Sec. 21-8-24 ..... Cmtd. 6-in. 950 ft; drlg. broken shale 1,825 ft.

MADISON COUNTY

Phillips Pet. Co. and F. S. Craver's No. 1, C, Sec. 11-14-28. Tested 250,000 ft. gas 63 ft; drlg. 1,461 ft.

OUACHITA COUNTY

Anderson & Wimmer's No. 1 Buck, Sec. 7-15-17 ..... D.S. test 2,680-90 ft; dry; drill stem stuck; T.D. 2,727 ft.

Artex Oil Co.'s No. 1 M. V. Smith, 330 ft. S, 330 ft. E, NW cor. SE NW, Sec. 31-15-17 ..... S.W. 3,077 ft; drlg. 3,166 ft; T.A. 3,188 ft.

Copenhaven et als' No. 1 Warnick, Sec. 2-15-17 ..... T.A. 2,190 ft.

Kobler & Erickson's No. 1 Rumph & Tyson, 300 ft. N, 300 ft. W, SE cor., Sec. 13-15-15 ..... Set 10-in. 98 ft.

A. P. Smith et als' No. 1 Reynolds, C SW NW, Sec. 21-14-17 ..... Drilled 6-in. plug; setting liner; T.D. 1,747 ft.

PIKE COUNTY

Theo. Davis, trustee's No. 1 Ruth Wilson, 200 ft. S, 200 ft. W, NE cor., Sec. 25-5-26 ..... S.D; funds; T.D. 713 ft.

POPE COUNTY

Ark.-La. Pipe Line Co.'s No. 1 Crutcher, 330 ft. S, 450 ft. E, NW cor. NE NW, Sec. 14-9-21 ..... Drlg. 396 ft.

Cosden Oil Co.'s No. 1 Mo. Pac. R.R., 660 ft. N, 660 ft. E, SW cor. NW SE, Sec. 13-9-19 ..... Drlg. 2,640 ft.

PRAIRIE COUNTY

Transcontinental Oil Co.'s No. 1 Louis Novak, 330 ft. E, 330 ft. N, SW cor. SW NE, Sec. 36-2n-6 ..... Reaming to bottom 2,930 ft.

ST. FRANCIS COUNTY

Brownlee Drlg. Co.'s No. 1 Whitted, 110 ft. N, 110 ft. E, SW cor. SE NW, Sec. 28-4-1 ..... S.D.; funds; 300 ft.

UNION COUNTY

Johnson Drlg. Co.'s No. 1 Tate, 300 ft. N and W, SE cor. NE NW, Sec. 14-18-14 ..... Rigging up.

Al-Cal Oil Corp.'s No. 1 Harvey, 660 ft. W, 300 ft. S, NE cor. SW SE, Sec. 1-17-16 ..... S.D. repairing rig; T.D. 2,718 ft.

W. M. Coates, trustee's No. 1 McDuffie, Sec. 32-19-17.. T.A. in red beds; T.D. 4,506 ft.

O. W. Estes' No. 1 Felsenthal, 330 ft. S, 330 ft. W, NE cor. NE NW, Sec. 2-18-15 ..... Pulled liner; S.D; W.O. 2,230 ft.

O. W. Estes' No. 1 Telford, 320 ft. S, 320 ft. E, NW cor. SW, Sec. 35-17-14 ..... Drlg. 2,555 ft.

Federal Pet. Co. and Union Sawmill Co.'s No. 1 fee, 330 ft. N, 330 ft. W, SE cor. NW NE, Sec. 9-18-13.. Derrick.

Lion Oil Ref. Co.'s No. 1 Ballard, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 10-18-13 ..... Drlg. 2,801 ft.

Marine Oil Co.'s No. 1 Simmons, 200 ft. N, 200 ft. W, SE cor. SE NW, Sec. 10-18-13 ..... Began drlg. Feb. 26; cmtd. 12-in. 273 ft; drlg. 1,675 ft.

Marine Oil Co.'s No. 2 Simmons, 300 ft. N, 300 ft. E, SW cor. SE NW, Sec. 10-18-13 ..... Rig up.

Marine Oil Co.'s No. 2-B Winn, 200 ft. S, 200 ft. E, NW cor. NW SE, Sec. 10-18-13 ..... Rig up.

Modisette et als' No. 1 Union Sawmill Co., 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 14-18-14 ..... Cmtd. 6⅝-in. 2,234 ft; drlg. 2,256 ft.

Johnson-Gummer Co.'s No. 1 Cargile, Sec. 4-18-15 ..... O.W.D.D; arranging to deepen; T.D. 3,341 ft; dry and abd. Oct. 2, 1929; washing to bottom; T. D. 3,341 ft.

Stark et als' No. 1 Ainsworth, NE cor. NW NE NE, Sec. 8-19-16 ..... T.A. 2,174 ft; corrected depth.

VAN BUREN COUNTY

Glenn Cole et al, trustees' No. 1 Scanlan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-13 ..... S.D. 50 ft.

WASHINGTON COUNTY

Delbert & Graves' No. 1 Cunningham, Sec. 14-16-32 .... S.D. repairing pump; T.D. 650 ft.

O'Hara & Shetterly's No. 1 Boyd, SE cor. SE NE, Sec. 12-16-32 ..... Spudded Sept., 1928; S.D. 140 ft; resumed drlg. Aug. 25; U.R; T. D. 150 ft.

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... Trying to kill wtr. flow 2,150 ft; hard sand showing oil 1,637-49 ft.

Lincoln Leaseholding Synd.'s No. 1 Lincoln, Sec. 30-15-32 ..... U.R. 8-in. to T.D. 1,500 ft.

WHITE COUNTY

Letona Synd.'s No. 1 Letona, SE cor. NW SW, Sec 35-9-8 ..... Cmtd. 5 3/16-in. 3,500 ft; drlg. 3,605 ft.

EAST TEXAS

CAMP COUNTY

Rogers et als' No. 1 Enfelt, R. M. Montgomery Sur. .... Tested dry 1,870 ft; S.D. 1,920 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. .... Drlg. 2,050 ft.
Shad Harper's No. 1 W. R. Garland, J. Wagley Sur. .... S.D. 1,862 ft.
Johnson Pet. Co.'s No. 2 Randolph, Edward Dean Sur... S.D. 2,000 ft.

SHELBY COUNTY

Benedum & Trees Oil Co.'s No. 1 McCann, D. G. Green Sur. ..... Drlg. 2,045 ft.
Chapperall Oil Co.'s No. 2 Holt, Matthew Moore Sur. .. S.D. for orders 3,004 ft.

MISSISSIPPI

ALCORN COUNTY

Alcorn Pet. Co.'s No. 1 Matthews, SE cor., Sec. 14-2s-7e.. Arranging to shoot 2,520-60 ft; T. D. 2,735 ft.

CHICKASAW COUNTY

Hightower & Golson's No. 1 Flemming, NE cor., Sec. 20-13-3 ..... Driving 8¼-in. through quicksand; T.D. 1,280 ft.

HINDS COUNTY

Oscar Brown's No. 1 Riverside (formerly Hennessee et als') SE cor. SE SW, Sec. 23-16-5 ..... Set 12½-in. 30 ft; S.D. 1,050 ft.
Jackson O. & G. Co.'s No. 1 Mayes, Sec. 2-5-1e ..... Estimated 2,000,000 ft. gas 2,000 bbls. wtr; S.D; T.D. 2,480 ft.
Mrs. Reeder et als' No. 1 State, SE cor. NW NW, Sec. 25-6-1e ..... W.O; T.D. 2,905 ft.

HUMPHREYS COUNTY

E. C. Steele et als' No. 1 C. B. Box, SE cor. SE NE, Sec. 25-14-4w ..... Set 12½-in. 60 ft; S.D.

LAUDERDALE COUNTY

Lauderdale O. & G. Co.'s No. 1 Lackey, 990 ft. S and E, NW cor. NE, Sec. 2-7-16 ..... Set 8¼-in. 2,792 ft; T.D. 2,816 ft. sand 2,803-14 ft; W.O.
Meridian O. & G. Co.'s No. 1 Hauser, Sec. 33-8-18 ..... S.D.; green sand 2,698 ft.
J. R. Smith Oil Co.'s No. 1 C. F. Craig, Sec. 2-6-14 .... Derrick.

LAFAYETTE COUNTY

Banks-Goode et als' No. 1 May, 113½ rods S, 26 rods E, NW cor. SW, Sec. 22-10-1w ..... Derrick.

LINCOLN COUNTY

Lincoln O. & G. Co.'s No. 1 Pat Case, NE NE, Sec. 21-8-6 ..... S.D; W.O. 2,221 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19 ..... S.D. 2,912 ft; bailer lost in hole.
Amory Pet. Co.'s No. 1 Hall, Sec. 8-13-19 ..... Bailing to test oil and gas show; T.D. 2,387 ft.
Park Bowser et als' No. 1 Cowart, second hole, Sec. 2-12-19 ..... S.D. 30 ft.

RANKIN COUNTY

Gulf Ref. Co.'s No. 1 Rainey, NW NW, Sec. 13-5-1e .... Rigging up.

WARREN COUNTY

El Dorado Oil Co.'s No. 1 Dornbush, Sec. 8-18-15 ..... Waiting for 6-in. to set; over 2,350 ft. stuck; D.S.; T.D. 2,475 ft.

YALOBUSHA COUNTY

Carter Oil Co. and J. D. Collett's No. 1 Blackmur, 330 ft. S, 550 ft. W, C, Sec. 14-11-4 ..... Fishing drill stem; T.D. 2,433 ft.

YAZOO COUNTY

Amerada Pet. Corp.'s No. 1 Doherty, SW SW, Sec. 24-12-2 ..... Drlg. 3,900 ft.

ALABAMA

LAMAR COUNTY

Briggs & Knapp's No. 1 Wefel, Sec. 25-12-14 ..... Drlg. hard lime 1,730 ft.

LAUDERDALE COUNTY

A. D. Morton et als' No. 10 O'Neal estate, Sec. 8-2s-13w. Rigging up cable tools.

MARION COUNTY

Hobson et als' No. 1 John Clark, SE, Sec. 29-11-14 ..... Derrick pattern.

WASHINGTON COUNTY

S. A. Hobson's No. 1 Hobson Bros., Sec. 9-8-2 ..... S.D; S.W. flow at 1,450 ft.
S. A. Hobson's No. 1 Wilson, Sec. 27-7-1 ..... Fishing bailer; T.D. 881 ft.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 63)

H. L. Hunt, Inc.'s No. 8 J. W. Peyton, 990 ft. E, 330 ft. S, C, Sec. 25-23-12 ..... Rigging up.
H. L. Hunt, Inc.'s No. 9 J. W. Peyton, 330 ft. S, 330 ft. E, C, Sec. 25-23-12 ..... Location.
H. L. Hunt, Inc.'s No. 10 J. W. Peyton, 990 ft. S, 330 ft. E, C, Sec. 25-23-12 ..... Rigging up.
La. Pet. Corp.'s No. 1 Bain, 330 ft. S and W, NE cor. SW NW, Sec. 31-23-11 ..... Rigging up.
La. Pet. Corp.'s No. 2 Bain, 330 ft. S and E, NW cor. SW NW, Sec. 31-23-11 ..... Rigging up.
Magnolia Pet. Co.'s No. 1 E. C. Dodson, Sec. 16-23-12.. O.W.D.D; arranging to deepen; T.D. 3,085 ft; completed Oct. 15, 1927 28,500,000 ft. of gas.
Magnolia Pet. Co.'s No. 2 Matlock, 330 ft. S and W, NE cor. SE SW, Sec. 25-23-12 ..... Location.
Magnolia Pet. Co.'s No. 1 Roberson, Sec. 26-23-12 ..... O.W.D.D; completed Dec. 27, 1927; 33,000,000 ft of gas at 3,059 ft.
Magnolia Pet. Co.'s No. 3 Matlock, 330 ft. N, 330 ft. W, SE cor. SE SW, Sec. 25-23-12 ..... Location.
Muslow Oil Co.'s No. 2-A Kilgore, Sec. 31-23-11, (no check) ..... Derrick.
Muslow Oil Co.'s No. 2 Barnett, 1,002 ft. N, 990 ft. W, SE cor., Sec. 25-23-12 ..... Began drlg. Feb. 26; cmtd. 10-in. 242 ft; drlg. 2,350 ft.
Muslow Oil Co.'s No. 2-B Kilgore, Sec. 31-23-11 ..... Began drlg. Feb. 27; cmtd. 10-in. 248 ft; drlg. 1,300 ft.
Muslow Oil Co.'s No. 3-B Kilgore, Sec. 31-23-11 ..... Began drlg. Feb. 27; cmtd. 10-in. 261 ft; drlg. 1,170 ft.
Muslow Oil Co.'s No. 1-C Kilgore, 2,080 ft. N, 1,980 ft. E, SW cor., Sec. 31-23-11 ..... W.O.S.R. 2,500 ft. fluid in hole; T.D. 3,167 ft.
Muslow Oil Co.'s No. 1 Mark Myer, 1,980 ft. N, 330 ft. W, SE cor., Sec. 36-23-12 ..... Arranging to deepen; T.D. 3,088 ft.
Muslow Oil Co.'s No. 2 Peyton, Sec. 30-23-11 ..... Rig up.
Muslow Oil Co.'s No. 3 Peyton, Sec. 30-23-11 ..... Drlg. 2,670 ft.
Muslow Oil Co.'s No. 1-B Barnett, 1,002 ft. N, 990 ft. W, SE cor., Sec. 25-23-12 ..... Began drlg. Feb. 22; cmtd. 10-in. 242 ft; drlg. 2,350 ft.
Muslow Oil Co.'s No. 1 Floyd, 990 ft. S, 330 ft. W, C, Sec. 25-23-12 ..... Began drlg. Mar. 3; drlg. 230 ft.
Northwest La. Gas Co.'s No. 5 Bollinger, 252 ft. E, 200 ft. S, NW cor. Lot 7, Sec. 31, in Sec. 38-23-11 ..... Cmtd. 6⅝-in. 3,167 ft; T.D. 3,170 ft.
Nat. Gas Prod. Co.'s No. 2 U. S. Govt., NW cor. SE NW, Sec. 31-23-11 ..... Drlg. 2,550 ft.
Nat. Gas Prod. Co.'s No. 2 U. S. Govt., NW cor. SE NW, Sec. 31-23-11 ..... Rig up.
Nat. Gas Prod. Co.'s No. 3 U. S. Govt., 1,520 ft. S, 2,580 ft. E, NW cor., Sec. 31-23-11 ..... Location.
Nat. Gas Prod. Co.'s No. 4 U. S. Govt., 2,440 ft. S, 2,580 ft. E, NW cor., Sec. 31-23-11 ..... Location.
Olsen Bros. and Ingall's No. 1 Pine Woods Lbr. Co., SE cor. NW NW, Sec. 25-23-12 ..... Location.
Olsen Bros. & Ingalls' No. 1 Roberson, Sec. 25-23-12 ... Location.
Phillips Pet. Co.'s No. 1 Floyd, 330 ft. S, 330 ft. W, C, Sec. 25-23-12 ..... Rigging up.
Palmer Corp.'s No. 1 Robinson, 660 ft. S, 660 ft. E, NW cor. NW NE, Sec. 26-23-12 ..... W.O.S.R. 2,000 ft. oil in hole; T. D. 3,175 ft.
Palmer Corp.'s No. 4 Roberson, 660 ft. E, 660 ft. S, NW cor. NW NE, Sec. 26-23-12 ..... 2,000 ft. oil in hole; W.O.S.R; T. D. 3,175 ft.
Phillips Pet. Co.'s No. 1-A Bollinger (formerly Sales & Walker's No. 4 Bollinger), 696 ft. S, 1,120 ft. E, NW cor. SW, Sec. 30-23-11 ..... Perforated 6⅝-in. 3,113-23 ft; 300 ft. oil in hole; W.O.S.R; T.D. 3,247 ft.
Phillips Pet. Co.'s No. 3 Bollinger, 700 ft. E, 265 ft. S, NW cor. SW SW, Sec. 30-23-11 ..... Began drlg. Mar. 4.
Phillips Pet. Co.'s No. 4 Bollinger, NW cor. E½, NW SE, Sec. 30-23-11 ..... Derrick.
The Texas Co.'s No. 2 Peyton, 990 ft. N, 330 ft. W. SE cor., Sec. 25-23-12 ..... Began drlg. Feb. 26; cm d. 10-in. 386 ft; drlg. 2,602 ft.
The Texas Co.'s No. 4 Peyton, 990 ft. E, 330 ft. N. SW cor., Sec. 30-23-11 ..... Rigging up.
The Texas Co.'s No. 3 Wilkinson, 990 ft. S, 330 ft. E, NW cor., Sec. 31-23-11 ..... Rigging up.
The Texas Co.'s No. 4 Wilkinson, 330 ft. S, 330 ft. E, NW cor., Sec. 31-23-11 ..... Rigging up.
Tippett et als' No. 1 Holmes, 200 ft. S, 200 ft. W, NE cor. NE NW, Sec. 36-23-12 ..... Rigging up.
John Woodley et als' No. 2 L. & A., 990 ft. N, 990 ft. W, SE cor., Sec. 14-23-12 ..... Completed Mar. 30, '26, flowing 200 bbls. fluid, 80% S.W; 4-ft. sand; T.D. 3,081 ft; pulling liner to deepen.
Woodley et als' No. 1 Roberson, 330 ft. N, 330 ft. W, SE cor. SW NE, Sec. 22-23-12 ..... Rig up.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1 Taylor Trosper, 2,519 ft. S, 1,293 ft. E, CWL, Sec. 7-16-16 ..... Drlg. 2,059 ft.

CADDO PARISH—HOSSTON

Bayou State Oil Corp.'s No. 1 Barr, 450 ft. S, 650 ft. W, NE cor. NW SE, Sec. 30-22-15 ..... W.O.S.R. 1,129 ft.
Bayou State Oil Corp.'s No. 2 Barr, Sec. 30-22-15 (no check) ..... Location.
Bayou State Oil Corp.'s No. 29 Jolly, 425 ft. W, 775 ft. N, SE cor. NE ..... W.O.S.R. 1,014 ft.

CADDO PARISH—DIXIE

Sam Gold's No. 3 Hunter, 660 ft. N, 660 ft. W. SE cor. SW NE, Sec. 17-19-14 ..... 200 ft. oil and S.W. in hole 2,457 ft; W.O.S.R; topped broken sand 2,415 ft.

CADDO PARISH—MOORINGSPORT DISTRICT

Falcon Oil Co.'s No. 2 Nunnely, 3,012 ft. N, 3,091 ft. E, SW cor., Sec. 29-20-15 ..... S.D. 1,600 ft.

CADDO PARISH—OIL CITY

Gulf Ref. Co.'s No. 24-A Levee Board, 200 ft. S, 200 ft. W, NE cor. SW NW, Sec. 34-21-16 ..... Drlg. 1,550 ft.
H. M. Maison's No. 1 U. S. Govt., 900 ft. E, 400 ft. S, NW cor. .. .. S.D. 2,000 ft.
The Texas Co.'s No. 72 Levee Board, 725 ft. N, 210 ft. E, SW cor. SE, Sec. 27-21-6 ..... Cmtd. 8-in.; drlg. 1,800 ft.
The Texas Co.'s No. 73 Levee Board, 1,642 ft. E, 780 ft. N, SW cor. SW SE, Sec. 27-21-16 ..... Location.

PINE ISLAND

Shreveport Oil Corp.'s No. 4 Hicks, Sec. 32-19-15 ..... Cmtd. 6-in. 2,012 ft.

CLAIBORNE PARISH—HOMER

Oakes et als' No. 1 Richardson, NE SE, Sec. 19-21-17 ... S.D. 1,700 ft.

LA SALLE PARISH—URANIA

Ark. Fuel Oil Co.'s No. 5 Urania, 200 ft. S, 200 ft. E, NW cor. NE SE, Sec. 24-10-1e ..... Tested; S.G. 4,740-65 ft; drlg. 4,790 ft.
Gulf States Gas Co.'s No. 1 Urania, 250 ft. W, 150 ft. S, NE cor., Sec. 1-10-1e ..... Drlg. 1,000 ft.
Hope Oil Co.'s No. 5 Urania, 660 ft. E, 150 ft. S, NW cor. SW SW, Sec. 19-10-2e ..... Derrick.
Kinney, Hardtner & Randall's No. 1 Kinney, SW SW, Sec. 7-10-2e ..... S.D. 1,570 ft.

MOREHOUSE PARISH

Bahan & Bahan's No. 3 Feazel, 990 ft. S, 990 ft. W, NE cor, Sec. 3-20-4 ..... Cmtd. 6-in. 2,088 ft.
Bahan & Bahan's No. 4 Feazel, 900 ft. W, 330 ft. S, NE cor., Sec. 3-20-4 ..... Location.
J. S. Herkness' No. 12 Bowles, 3,392 ft. E, 3,300 ft. S, NW cor., Sec. 18-20-5 ..... Fishing D.S; T.D. 2,737 ft.
La. G. & F. Co.'s No. 26 Crossett, 645 ft. E, 574 ft. S, NW cor. Lot 9, Sec. 33-21-5 ..... Location.
Magnolia Pet. Co.'s No. 8 U. S. Govt., 310 ft. S, 410 ft. E, NW cor., Lot 4, Sec. 33-21-5 ..... S.D. on account of high wtr; T. D. 204 ft.
Nat. Gas Prod. Co.'s No. 25 Crosset Lbr. Co., 1,444 ft. S, 793 ft. W, NE cor. NW, Sec. 29-21-5 ..... Tested 500,000 ft. gas 2,264 ft; drlg. 2,274 ft.
J. A. Noe et als' No. 1 Wright, 694 ft. N, 393 ft. W, C, Sec. 27-20-4 ..... Drlg. 1,930 ft.
Southern Carbon Co.'s No. 14 Tensas, 660 ft. N, 660 ft. E, SW cor. NW, Sec. 34-21-4 ..... S.D. on account high wtr; T.D. 2,081 ft.

OUACHITA PARISH

Chauvin Gas Co.'s No. 4 Slagle Johnson, 647 ft. W, 2,803 ft. S, NE cor., Sec. 47-18-4 ..... Rig up.
Hope Prod. Co.'s No. 2 Fairbanks, 1,876 ft. E, 628 ft. N, SW cor. SE, Sec. 25-20-4 ..... Location; reported drlg. in error.
Hope Prod. Co.'s No. 3 Fairbanks, 1,876 ft. E, 628 ft. S, NW cor. NE, Sec. 36-20-4 ..... Began drlg. Feb. 24; cmtd. 12½-in. 135 ft.
G. E. Jordan's No. 1 Anding, NW NE, Sec. 18-18-15 .... Waiting cmt. to set 2,480 ft.
Jordan Drlg. Co.'s No. 6 Cole, 1,596 ft. W, 2,388 ft. N, SE cor., Sec. 49, in Sec. 80-18-4 ..... Rigging up.
Jordan Drlg. Co.'s No. 2 Perebrook, 1,207 ft. W, 264 ft. S, C, Sec. 9-18-4 ..... Location.
Jordan Drlg. Co.'s No. 1 School, 216 ft. S, 244 ft. W. NE cor. NW, Sec. 16-18-4 ..... Location.
La. Gas & Fuel Co.'s No. 1 Beard, Sec. 46-18-4 ..... Cmtd. 6-in. 2,143 ft.
Magnolia Pet. Co.'s No. 2 fee 401, 660 ft. S, 660 ft. E, NW cor., Sec. 2-18-3 ..... Derrick.
Sho-Van Gas Products Co.'s No. 3 W. Va., 1,980 ft. S and W, NE cor., Sec. 8-18-4 ..... Cmtd. 6-in. 2,145 ft.
Sho-Van Gas Products Co.'s No. 4 W. Va., 1,078 ft. N, 294 ft. W, NE cor., Sec. 49, in Sec. 7 ..... Rig up.
Union Gas Products Co.'s No. 1 Hare, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 22-19-5 ..... D.S. test 2,565 ft; dry; W.O.
United Oil & Nat. Gas Products Co. of La.'s No. 5 Guthrie, 6,396 ft. N, 6,022 ft. W, cor. Secs. 49, 26, and 25, Sec. 49-20-5 ..... Derrick.
United Carbon Co.'s No. 2 Puckett, 660 ft. N, 660 ft. E, SW cor. SW, Sec. 15-19-5 ..... Tested S.W. 2,482 ft; drlg. 2,496 ft.
United Carbon Co.'s No. 4 Spade, 774 ft. S, 2,081 ft. E, NW cor., Sec. 6-18-4 ..... S.D. 2,040 ft.
United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4 ..... Location.
United O. & N. G. Co.'s No. 2 Cole, 660 ft. S, 594 ft. E, C. Sec. 26-20-4 ..... Derrick.

RICHLAND PARISH

Ark.-La. P. L. Co.'s No. 8-B E. A. and F. B. Sartor, 300 ft. N, 330 ft. E, SW cor., Sec. 24-16-5 ..... Set 12-in. 785 ft; drlg. 1,400 ft.
W. C. Feazel's No. 1 R. B. Simon, 2,406 ft. W, 2,020 ft. S, NE cor., Sec. 11-16-6 ..... Rig up.
International Gas Products Co.'s No. 1-B Beck, 660 ft. S, 713 ft. E, NW cor., Sec. 36-16-6 ..... Tested dry; show S.W. 2,450-70 ft; estimated 100,000 ft. gas; tested dry 2,539 ft; W.O.
International Gas Products Co.'s No. 1 Minnie La-Grone, 769 ft. N, 858 ft. E, SW cor., Sec. 7-16-7 ... Location.

La. G. & F. Co.'s No. 1 Chapman, 2,497 ft. E, 1,980 ft. S, NW cor., Sec. 36-16-6 ..... Set 6-in. 2,300 ft.
La. G. & F. Co.'s No. 2-C F. B. Sartor, 750 ft. N, 945 ft. E, C, Sec. 20-16-6 ..... Location.
Nat. Gas Products Co.'s No. 1-C Sartor, 536 ft. N, 1,333 ft. E, SW cor. NW, Sec. 21-16-6 ..... Drlg. shale 1,800 ft.
Palmer Corp.'s No. 1-A F. N. Boykin, 660 ft. N, 660 ft. W, SE cor. NE, Sec. 20-17-6 ..... Tested 9,000,000 ft. gas and leaky csg. at 2,446 ft; arranging to re-test.
Palmer Corp.'s No. 1 B. F. Chapman, 3,300 ft. S, 1,330 ft. W, NE cor., Sec. 35-16-6 ..... Derrick.
Palmer Corp.'s No. 1-A Earl, Sec. 2-16-6 ..... Fishing for liner 2,500 ft.
Southern Carbon Co.'s No. 1 Hale, 660 ft. N, 760 ft. W, SE cor., Sec. 16-16-6 ..... Milling out liner; T.D. 2,460 ft.
Southern Carbon Co.'s No. 1 Lindow, 3,300 ft. W, 1,320 ft. S, NE cor., Sec. 16-16-6 ..... Derrick.
Southern Carbon Co.'s No. 1 McCoy, 1,980 ft. E, 3,300 ft. S, NE cor., Sec. 16-16-6 ..... Drlg. shale 2,280 ft.
Southern Carbon Co.'s No. 1 W. E. Landers, 1,980 ft. N, 1,220 ft. E, SW cor., Sec. 10-16-6 ..... Location.
Southern Carbon Co.'s No. 1 L. S. Mulhern, 1,016 ft. W, 200 ft. S, NE cor. NW, Sec. 19-16-6 ..... Location.
United Carbon Co.'s No. 1 W. M. Hallock, 1,980 ft. N, 660 ft. W, SE cor., Sec. 2-16-6 ..... Location.
United Carbon Co.'s No. 1 D. R. Sartor, 3,341 ft. W, 3,960 ft. S, NE cor., Sec. 11-16-6 ..... Cmtd. 6-in. 2,280 f..

SABINE PARISH—PLEASANT HILL

Air Lift Oil Co. and Root Refineries, Inc.'s No. 1 Leone, 150 ft. S, 150 ft. W, NE cor. S½ SE SW, Sec. 32-8-12 ..... Derrick.
Ark. Fuel Oil Co.'s No. 4 Horne, 370 ft. S, 450 ft. W, NE cor. SW, Sec. 33-10-12 ..... Began drlg. Feb. 20; set 12½-in. 215 ft; drlg. 1,220 ft.
Ark. Fuel Oil Co.'s No. 1 Nunn, 330 ft. N, 330 ft. E, C, Sec. 32-8-12 ..... Began drlg. Mar. 2; cmtd. 10-in. 106 ft.
Bridges-Clarke Oil Co.'s No. 1 Guy, 300 ft. N, 300 ft. E, SW cor. SE SE, Sec. 33-10-12 ..... Tested S.W. 3,300 ft; T.A.
Bridges-Clark Oil Co.'s No. 1 Smith, 330 ft. N, 330 ft. W, SE cor. SW SE, Sec. 33-10-12 ..... Began drlg. Mar. 4.
Hatcher et als' No. 1 Moore heirs, 300 ft. N, 300 ft. E, C, Sec. 32-10-12 ..... Derrick.
Magnolia Pet. Co.'s No. 2 McLeroy, 230 ft. S, 200 ft. W, NE cor. W½ SE SW, Sec. 33-10-12 ..... Two joints S.W. 2,405 ft; drlg. shale 2,440 ft.

SABINE PARISH—ZWOLLE

Amerada Pet. Corp.'s No. 1 Bowman-Hicks 330 ft. N, 330 ft. W, SE cor. NE NE, Sec. 33-8-12 ..... 1,800 ft. oil in hole; S.D; W.O.S. R. 2,456 ft.
Benedum & Trees Oil Co.'s No. 3 Bowman-Hicks, 330 ft. S, 330 ft. W, NE cor. SE, Sec. 34-8-12 ..... Cored chalk showing oil 2,350-57 ft; setting 6-in. 2,324 ft.
R. L. Gay, trustee's No. 6 Bowman-Hicks, 900 ft. N, 800 ft. W, SE cor. NW SE, Sec. 14-7-14 ..... Bailing to test 2,567 ft.
Benedum & Trees Oil Co.'s No. 4 Bowman-Hicks, 330 ft. N, 330 ft. W, C, Sec. 34-8-12 ..... Derrick.
Benedum & Trees Oil Co.'s No. 5 Bowman-Hicks, 900 ft. S, 1,400 ft. W, C, Sec. 34-8-12 ..... Began drlg. Feb. 28; cmtd. 12½-in. 102 ft; drlg. 1,550 ft.
Benedum & Trees' No. 6 Bowman-Hicks, 330 ft. N, 330 ft. E, SW cor. SE, Sec. 33-8-12 ..... Began drlg. Mar. 3.
Benedum & Trees Oil Co.'s (was R. L. Gay, trustee's) No. 2-A Bowman-Hicks Lbr. Co., 200 ft. S, 200 ft. W, NE cor. NE NW ..... 150 ft. oil in hole; bailing; T.D. 2,510 ft.
Benedum & Trees' No. 1 Sabine Lbr., 330 ft. N and E, C, Sec. 34-8-12 ..... Began drlg. Mar. 1; cmtd. 12½-in. 101 ft; drlg. 260 ft.
Benedum & Trees' No. 7 Bowman-Hicks, 330 ft. S and W, NE cor. NW, Sec. 34-7-12 ..... Rigging up.
G. H. Broderick's No. 1 Bolin, Sec. 31-8-12 (Zwolle Townsite) ..... Derrick.
Broderick & Calvert's No. 1 Sabine Lbr. Co., 150 ft. N, 150 ft. W, SE cor. SE SW, Sec. 31-8-12 (Zwolle Townsite) ..... Derrick.
Joe Burnham et als' No. 1 Bolin, 200 ft. N, 408 ft. E, SW cor. SW NE, Sec. 31-8-12 ..... Derrick.
Davis & Tyson's No. 1 Neville-Roberts, Sec. 31-8-12 (Zwolle Townsite) ..... Rigging up.
Dixie Oil Co.'s No. 1 Nunn, 330 ft. N, 85 ft. W, C, Sec. 32-8-12 ..... Rigging up.
Glassell & Merren's No. 1 Thomas, Lot 13, Blk. 3 (Zwolle Twp.), Sec. 31-8-12 ..... Derrick.
R. L. Gay, trustee's No. 3 Sabine Lbr. Co., 1,120 ft. N, 200 ft. E, SW cor., Sec. 13-7-14 ..... 200 ft. oil in hole; T.D. 2,390 ft; arranging to deepen.
W. G. Gray's No. 1 Bolin, Sec. 31-8-12 ..... Cmtd. 8¼-in. 2,167 ft; T.D. 2,177 ft.
W. G. Gray, trustee's No. 1 Knowlton, 200 ft. S, 330 ft. W, NE cor. NW NE, Sec. 6-7-12 ..... Began drlg. Mar. 4.
G. A. Henshaw et als' No. 1-A Sabine Lbr. Co., 200 ft. N, 760 ft. E, SW cor. SE NE, Sec. 31-8-12 ..... Derrick.
G. A. Henshaw et als' No. 2-A Sabine Lbr. Co., 200 ft. N and E, SW cor. SE NE, Sec. 31-8-12 ..... Began drlg. Mar. 2; cmtd. 10-in. 103 ft.
G. A. Henshaw et als' No. 3-A Sabine Lbr. Co., 766 ft. N, 200 ft. E, SW cor. SE NE, Sec. 31-8-12 ..... Location.
G. A. Henshaw et als' No. 1-B Sabine Lbr. Co., 150 ft. S and E, C, Sec. 31-8-12 ..... Rigging up.
C. L. Jett, trustee's No. 1 Jones, 150 ft. C, Sec. 31-8-12.. Began drlg. Mar. 3; cmtd. 10-in. 100 ft.
Herbert Oil Co.'s No. 1 Noble, 750 ft. S, 1,250 ft. E, NW cor. SW, Sec. 31-8-12 ..... Location.
Lide et als' No. 2 Sabine Lbr. Co., 330 ft. S, 330 ft. W, NE cor. NW SE, Sec. 31-8-12 ..... Set 6⅝-in. 2,180 ft; T.D. 2,182 ft.
Lloyd Oil Corp.'s No. 1 Barnett, Sec. 31-8-12 (Zwolle Townsite) ..... Derrick.
V. M. Miller's No. 1 Colquitt, 300 ft. S, 230 ft. W, NE cor. SE, Sec. 31-8-12 ..... Cmtd. 6⅝-in. 2,176 ft.
O'Brien Bros.' No. 1 Colquitt, 330 ft. S and E, NW cor. SW, Sec. 32-8-12 ..... Began drlg. Mar. 2; cmtd. 10-in. 103 ft.
Ohio Oil Co.'s No. 3 Bowman-Hicks, 330 ft. S and W, NE cor. SE SW, Sec. 33-8-12 ..... Began drlg. Feb. 28; cmtd. 10-in. 243 ft.
Ohio Oil Co.'s No. 4 Bowman-Hicks, 330 ft. N and E, SW cor. NW SW, Sec. 35-8-12 ..... Began drlg. Mar. 1; cmtd. 10-in. 217 ft.
Olsen Bros.' No. 1 Keeler, SW cor. SW SE, Sec. 27-8-12.. T.A. 2,625 ft.
Olsen Bros.' No. 1 Leone, 150 ft. N, 250 ft. E, SW cor. SW NW, Sec. 32-8-12 ..... Top chalk 2,266 ft; coring 2,272 ft.
Ruston Drlg. Co.'s No. 1 Bowman-Hicks, 330 ft. S, 330 ft. W, NE cor., Sec. 4-7-12 ..... Showed oil; bailed dry 2,524 ft. and 2,563 ft; arranging to deepen.
Ruston Drlg. Co.'s No. 1-A Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. SW SW, Sec. 35-8-12 ..... Rigging up.
Sabine O. & G. Co.'s No. 1 Anderson, 200 ft. N, 200 ft. E, SW cor. SW NW, Sec. 19-18-13 ..... Tested S.W. 2,603 ft; cmtng. bottom.
C. E. Simmons' No. 1 Bolin, 116 ft. E, 126 ft. N, C, Sec. 31-8-12 ..... Rigging up.
W. S. Smith et als' No. 1 Colquitt (Zwolle Townsite), Sec. 31-8-12 ..... Derrick.
W. S. Smith et als' No. 1 Williams (Zwolle Townsite), Sec. 31-8-12 ..... Derrick.
Standard Oil Co.'s No. 1 L. N. Nunn, 990 ft. S, 330 ft. E, C, Sec. 32-8-12 ..... Began drlg. Mar. 3.
Stovall Drlg. Co.'s No. 1 Lefkovitz, 247 ft. N, 250 ft. W, SE cor. N¾ SE NW, Sec. 33-8-12 ..... Bailing to test; T.D. 2,335 ft.
A. H. Tarver's No. 1 Sabine State Bank, 250 ft. N, 250 ft. W, C, Sec. 27-8-12 ..... 50 ft. oil in hole; W.O; T.D. 2,480 ft.
Warner-Quinlan Co.'s No. 1 Peterson, 660 ft. S, 660 ft. W, NE cor. NW SE, Sec. 26-3-13 ..... Dry 2,550 ft; coring 2,581 ft.

UNION PARISH

Lyons Gas Co.'s No. 2 Jones, 1,190 ft. W, 138 ft. S, NE cor. NW, Sec. 11-20-3 ..... Set 6-in. 2,115 ft.
United Carbon Co.'s No. 1 McInnis, 660 ft. N and E, SW cor. SE, Sec. 19-20-4e ..... Began drlg. Feb. 26; cmtd. 12½-in. 185 ft; 8-in. 750 ft.

WEBSTER PARISH—COTTON VALLEY

Palmer Corp.'s No. 3 Miller, 660 ft. N, 660 ft. E, SW cor., Sec. 28-21-10 ..... Drlg. lime and shale 4,735 ft.
Standard Oil Co.'s No. 1-B Crichton, 660 ft. S, 660 ft. E, NW cor., Sec. 33-21-10 ..... Cmtd. 6⅝-in. 4,300 ft.

WEBSTER PARISH—SAREPTA AND SHONGALOO

Bateman et als' No. 3 Womble, 200 ft. S, 660 ft. E, NW cor. NW SW, Sec. 1-22-11 ..... Location.
Donohoe O. & G. Co.'s No. 1-B W. B. Roseberry, 250 ft. S, 250 ft. E, C, Sec. 19-23-9 ..... Rig moved; hole abd. 104 ft.
Pat Hudson's No. 2 S. Gardner, 330 ft. N, 300 ft. E, C, Sec. 1-22-11 ..... Derrick.
Pat Hudson's No. 1 B. L. Slack, 330 ft. W, 330 ft. N, SE cor. NW, Sec. 36-23-11 ..... Drlg. 2,685 ft.
Jacob Laskin's No. 2 Pardee, 1,270 ft. W, 50 ft. S, NE cor. NW, Sec. 3-22-11 ..... W.O.S.R. 2,656 ft.
Ligget et als' No. 1 Slack, 150 ft. N, 366 ft. W, SE cor. SW SE, Sec. 36-23-11 ..... Derrick.
Magnolia Pet. Co.'s No. 1 J. P. Baker, 1,120 ft. S, 225 ft. E, NW cor. SW, Sec. 35-22-11 ..... Plugged back from 3,392 to 3,050 ft; waiting cmt. to set.
Magnolia Pet. Co.'s No. 2 Denman, 100 ft. N, 160 ft. W, SE cor. NE NW, Sec. 1-22-11 ..... W.O.S.R; T.D. 2,749 ft.
Merritt & Merritt's No. 1 Boucher (no check), SE SE, Sec. 17-23-11 ..... Drlg. 860 ft.
Sarepta Oil Co.'s No. 1 L. S. Gardner, 300 ft. S, 300 ft. W, C, Sec. 1-22-11 ..... W.O.S.R; 600 ft. fluid; T.D. 2,719 ft.

ARKANSAS

JOHNSON COUNTY—CLARKSVILLE

Ark. La. P. L. Co.'s No. 1 Patterson, 1,020 ft. S, 2,570 ft. E, NW cor., Sec. 14-10-24 ..... Cmtd. 10-in. 2,480 ft.

NEVADA COUNTY

Roy Davis et als' No. 1 Chas. Henry, 1,120 ft. N, 1,120 ft. W, SE cor., Sec. 10-12-20 ..... Rig up.
C. F. Steele's No. 1 E. W. Groves, Sec. 21-14-20 ..... Shut down.

OUACHITA COUNTY—MOUNT HOLLY DISTRICT

McDonald Bros.' No. 2 Wilson, 700 ft. S, 275 ft. W, NE cor. NW SW, Sec. 25-15-18 ..... Began drlg. Feb. 27; cmtd. 10-in. 254 ft.

OUACHITA COUNTY—SMACKOVER

J. H. Hamilton's No. 1 Arnold & Doyle, SE SE, Sec. 23-15-16 ..... Pumping; no gauge; 2,039 ft.
Southern Producing Co.'s No. 3-A Watts, 700 ft. E, 150 ft. N, SW cor. SE SW, Sec. 27-15-15 ..... Drlg. 6-in. plug; T.D. 2,045 ft.
J. D. Wingfield's No. 1 Martin, SW cor., Sec. 26-15-15.. Set 6⅝-in. 2,035 ft; tested little oil and S.W; W.O; T.D. 2,115 ft.

OUACHITA COUNTY—STEPHENS

Magnolia Pet. Co.'s No. 1 Grayson, C, Lot 30, NE SE, Sec. 21-15-19 ..... W.O.S.R; 800 ft. fluid; T.D. 1,478 ft.
Magnolia Pet. Co.'s No. 2 Grayson, 150 ft. N, 200 ft. W, SE cor. NE, Sec. 21-15-19 ..... Rig up.

UNION COUNTY—CHAMPAGNOLLE

O. W. Estes' No. 1 Bates, 200 ft. N, 200 ft. E, SW cor., Sec. 13-17-14 ..... Location.

UNION COUNTY—EL DORADO

H. L. Hunt's No. 6 Pratt, 150 ft. N, 330 ft. E, SW cor. NE NE, Sec. 7-18-15 ..... Running sand pump; T.D. 2,214 ft.
Malloy & Co.'s No. 4 Goodwin, 300 ft. N, 300 ft. E, SW cor. NE NE, Sec. 36-17-16 ..... Cmtd. 6⅝-in. 2,186 ft.
Malloy & Co.'s No. 3 Robertson, NE cor. S½ SW NE, Sec. 6-18-15 ..... Location.
Rice et als' No. 1 W. Raity, 150 ft. S, 150 ft. E, NW cor. SW, Sec. 7-17-15 ..... Spudded July 18; cmtd. 10-in. at 92 ft.
Weisinger & Ball's No. 1 Rogers, 1,014 ft. N, 150 ft. E, SW cor. E½ SW SE, Sec. 31-17-15 ..... Bailing csg.; T.D. 2,170 ft.

UNION COUNTY—SMACKOVER

E. L. Chapman's No. 2 Bradley, 330 ft. N, 330 ft. E, SW cor. Lot 3, NW, Sec. 2-16-16 ..... Cmtd. 6-in. 1,949 ft; T.D. 1,978 ft.
Lion Oil Ref. Co.'s No. 1 James, CWL, Lot 2, NW, Sec. 6-16-15 ..... T.A. 2,018 ft.

EAST TEXAS

PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 11 Werner, 1,850 ft. S, 1,052 ft. W, NE cor. E. F. Mitcheson Sur. ..... Drlg. 3,020 ft.
Bahan & Bahan's No. 1 Tom Hill, 150 ft. N, 2,315 ft. E, SW cor. E. F. Mitcheson Sur. ..... Rigging up.
Calatex O. & G. Co.'s No. 3 Caldwell, 243 ft. S, 1,034 ft. W, SE cor. John Womack Sur., in Jas. Shadoin Sur. ..... S.D; W.O. 1,072 ft.
Magnolia Pet. Co.'s No. 2 G. C. Tiller, Jane Thorpe Sur.. Drlg. sandy lime 3,490 ft.
Magnolia Pet. Co.'s No. 6 G. C. Tiller, 393 ft. S, 1,990 ft. E, NW cor. Jane Thorpe Sur. ..... Plugged back from 3,425 to 2,380 ft; waiting cmt. to set.
Nat. Gas Prod. Co.'s No. 8 Roquemore, B. C. Jordan Sur.. Drlg. 4,500 ft.
D. Thomason's No. 5 J. M. Trosper, 4,200 ft. N, 335 ft. W, SE cor. Jane Thorpe Sur. ..... Began drlg. Feb. 26; cmtd. 10-in. 100 ft; drlg. 600 ft.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 64)

H. H. Wallace et al's No. 2 Dulnig in the Justo-Esqueda Sur., 5 miles SE from San Antonio ..... T. D. 1,515 ft.; dry and abandoned.
Moore-Jauer's No. 1 Holly R. Ellison ..... T. D. 1,980 ft.; shut down

BROOKS COUNTY

Amos Dinn, trustee's No. 3 Garcia-Ramos, Share B-1, Las Mestenas y Gonzales grant, 1,300 ft. S line, 2,325 ft. W line of Share B-1 ..... T. D. 1,655 ft.; standing.
Humble Oil & Ref. Co. and Shell Pet. Corp.'s No. 1 Singer, Alta Verde Subd., 2,500 ft. S and N line, 333 ft. W and E line of Section 312 ..... T. D. 3,600 ft.; drlg. in gumbo and sticky shale.

CALDWELL COUNTY

W. E. Allaun and Calco Pet. Co.'s No. 1 Martin ..... T. D. 2,920 ft.; preparing to shoot.
Keen & Malcolm's No. 1 Mollie McNeal, George C. Kimball Sur., 2,500 ft. to W line, 860 ft. to N line, 1 mile S from old Luling Field ..... T. D. 2,080 ft.; drlg. in shale.
San Antonio Petroleum Corp.'s No. 1 Gustave Walkerhagen, Thomas Maxwell Sur., 150 ft. to NW and SW lines, 11 miles W from Lockhart ..... T. D. 1,425 ft.; dropped from reports.

G. R. McIntire's No. 1 J. G. Towns in the I. Weldon Sur., 4,900 ft. to NE line, 1,350 ft. to SE line of Sur. ... T. D. 2,630 ft. in chalk; shut down.

Cranfill & Reynolds' No. 1 M. L. Stroun, 150 ft. from SE and SW line of farm of Pablo Martenz Sur. ... T. D. 2,000 ft.; set csg.

Trinity Drillers' No. 1 McMullen, 2,125 ft. from NE line, 150 ft. from NW line of Sur., Gibson Betty Sur. ... T. D. 300 ft.; drlg. in sandy shale.

DEWITT COUNTY

Gibson & McIntyre's No. 1 William Van Roeder ... T. D. 1,480 ft.; shut down.

F. P. Zoch's No. 1 Steinman, John Garelli Sur., 976 ft. ...

H. T. Roe's No. 1 Leinhardt ... T. D. 1,750 ft.; working over machinery to start up.

DIMMITT COUNTY

Texas Fuel Gas Co.'s No. 1 City Natl Bank (Laxon) ... T. D. 680 ft.

DUVAL COUNTY

T. W. Callahan and W. M. Howard's No. 1 J. M. Luby, 3,960 ft. N line, 3,960 ft. W line Sur. 24 ... Cutting road and clearing location.

National Oil Co.'s No. 2 Ball, Agua Poquita Sur., Blk. 3. ... T. D. 3,206 ft.; drlg. hard shale.

F. P. Zoch's No. 1 King, Blk. 25, Hoffer and Smith Subd., W. R. King ranch, Diego Hinijosa grant, 660 ft. N line, 660 ft. E line ... T. D. 3,712 ft.; coring.

Southern Oil Co.'s No. 1 Welder Wood, Sur. 215 ... T. D. 750 ft.; standing waiting on water.

EDWARDS COUNTY

Phillips Pet. Corp.'s No. 2 A. G. Holman, 330 ft. from N and E lines of SE of tract, C.C.S.D.&N.G.R.G. Sur. No. 25 ... Location.

FRIO COUNTY

Frank B. LeFeure's No. 1 H. W. and R. L. Eschenburg, Edward Galligher Sur. No. 789, 3,980 ft. W of SE cor. of Edward Galligher Sur. No. 788 and 1,320 ft. S of N line of Edward Galligher Sur. No. 789 ... T. D. 1,100 ft.; drlg. in sandy shale.

GOLIAD COUNTY

Wm. F. Morgan's No. 1 George Ray in Pedro Trevano Sur., 150 ft. from SE and NW line of George Ray 627-ac. tract ... T. D. 2,415 ft.; drlg. in tough gumbo.

Humble Oil & Ref. Co.'s No. 1 Lackey & Weldon, 2,000 ft. from SE and SW lines of the Lackey & Weldon 1,000-ac. tract out of the most SW cor. thereof in the Javiano Gomez Sur. ... Location.

GONZALES COUNTY

Acme Oil & Royalty Corp.'s No. 1 Weber, Thomas Wright Sur. ... T. D. 2,220 ft.; drlg. in sandy shale.

Fitzsimmons & Perrinot's No. 1 Z. Huber, 2,100 varas from NW line, 1,450 varas from NE line (river) of survey, 2¾ miles SE of Darst Creek in Stephen Smith Sur. ... T. D. 2,340 ft.; dry hard sandy marl, streaks of lime.

Alice R. Garrett's No. 1 W. H. Cardwell, 150 ft. from SW line, 1,650 ft. from SE line of Sur., 12 miles S from Gonzales in the Byrd Lockhart Sur. ... Spudded and shut down.

Finnell & Elam's No. 1 Robinson, Liverpool Sur. ... T. D. 1,720 ft.; to resume drlg.

GUADALUPE COUNTY

Adams & Lyles' No. 1 Hoffman, 250 ft. S of N line, 350 ft. E of NE cor. of John Sowell Sur. in Green DeWitt Sur., 5 miles NW from Darst Creek ... T. D. 2,670 ft.; Eagleford; dry and abandoned.

L. M. Conner et al's No. 1 Tom Harboth (212-ac.), 1,000 ft. from NE line, 4,500 ft. from NW line of the Robert Hall Sur. ... T. D. 2,245 ft.; drlg. in chalk.

Turman et al's No. 1 St. Charles, 150 ft. N line, 300 ft. from W line of Sur., 5 miles SW of Grayburg's No. 1 Wells, SE cor. of county in the J. A. Miller Sur. ... T. D. 2,209 ft.; drlg. in shale.

Trinity Drillers' No. 1 J. M. White, 975 ft. from NE line, 750 ft. from SE line of 166-ac. farm in the Mich Miller Sur. ... Derrick (corrected).

HAYS COUNTY

John H. Foster, trustee's No. 2 W. G. Barber, 7 miles SE of Buda ... T. D. 671 ft.; shut down.

JIM WELLS COUNTY

E. W. Ogden's No. 1 G. Farris, M. Perez Sur. ... T. D. 2,615 ft.; shut down.

KARNES COUNTY

Ruby & Claypool's No. 1 Tom V. Zepeda Sur., 850 ft. N line, 1,600 ft. E line ... T. D. 2,130 ft.; drlg. in shale and boulders.

Hurador Oil Co.'s No. 1 W. E. Porter ... T. D. 3,400 ft.; shut down.

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur. ... T. D. 600 ft.; corrected depth; pulled csg.; reaming.

Dixon Oil Co.'s No. 1 Ottmer Behr, W of H.T.&B.R.R. Sur., 3½ miles SE from Sisterdale ... Rigging up.

Sterling's No. 1 Willie Werner, 2 miles NW from Borgett No. 1 Haag ... T. D. 914 ft. (corrected); putting on pump.

KERR COUNTY

Mashe and Tunstill's No. 1 Love Ranch, 1,000 ft. from W line of Sec. 1,594, 100 ft. S of S line of Sec. 1,597 in the G.C.S.D.&R.G.N.G. Sur. ... Moving in.

KLEBERG COUNTY

Bowen-Harles' No. 1 Robert H. Simmons, Sec. 7, King Subd., 3 miles W from Ricardo ... T. D. 415 ft.; standing.

KINNEY COUNTY

Lloyd Oil Co.'s No. 1 G. B. Moore, Sur. 117 ... T. D. 3,000 ft.; producing sulphur water.

A. Blume et al's No. 2 Herbst, 1,731 ft. W and S lines of Sur. in the Poindexter-Burns Sur. ... Spudded in.

Mardon Oil Co.'s No. 2 Jim Clamp, in the John Winters Sur. No. 346, near No. 1 ... Spudded in.

LASALLE COUNTY

Salt Lake City Pet. Co.'s No. 1 Beckwith, Sur. 17, 150 ft. S line, 150 ft. E line ... T. D. 2,760 ft.; cored 15 ft. oil sand; sand saturated with very heavy oil.

LAVACA COUNTY

McElreath & Suggett's No. 1 Julius Heinshohn, 361 ft. to E, 523 ft. to S line of farm in the G.W.& W.H. Sur. ... Derrick.

LEE COUNTY

Byrd et al's No. 1 H. L. Bastle, 1,200 ft. N and 1,000 ft. E of 80-ac. tract of Wm. Johnson ... T. D. 3,612 ft.; shut down; hole full of water.

Texas-Louisiana Carbon Corp.'s No. 1 Bryan, in the S. F. Austin Sur., 1,200 ft. N and W of 1,200-ac. farm ... T. D. 3,380 ft.; drill stem stuck.

Todor Oil Corp.'s No. 1 H. Zsesch, in the J. Meeks Sur., 150 ft. N and 900 ft. W of S. Meeks Sur. ... T. D. 2,000 ft.; shut down.

LIVE OAK COUNTY

O'Neil & Catlett's No. 1 Smith, 900 ft. SW line, 150 ft. NW line ... T. D. 4,150 ft.; coring sand.

Dr. J. K. Rowan Co.'s No. 1 Lynne Ranch, 171 ft. W of George West ... Location.

Simmons Oil Co.'s No. 1 Richard Coquat, in James C. Hill Sur., 2,250 ft. to S line, 1,750 ft. to E line, 7 miles NE of Oakville ... T. D. 4,012 ft.; shut down; awaiting orders.

MAVERICK COUNTY

Rycade Oil Corp.'s No. 6 Chittim, 1,455 ft. from S, 320 ft. from W of Sec. 116, Blk. 7, I.&G.N. Sur. ... Rigging up.

Rycade Oil Corp.'s No. 5 Chittim ... T. D. 3,442 ft.; standing; hole full sulphur water.

Rycade Oil Corp.'s No. 5 Sullivan, in C of Sec. 82, Blk. 7, in the I.&G.N. Sur. ... T. D. 950 ft.; drlg. in lime.

Rycade Oil Corp.'s No. 2 Chittim, Blk. 7, Sur. 116, H.& G.N., 175 ft. N of No. 1, 10 ft. W, 225 ft. S line ... T. D. 6,636 ft.; shut down for orders.

MEDINA COUNTY

Pat Armstrong's No. 1 C. W. Butts in George C. Hanson Sur. ... T. D. 1,102 ft.; shut down.

Pan American Pet. Co.'s No. 1 Antoine Hart in Harrison Sur. No. 799, 15 miles S from Hondo ... Laying gas line to rig.

Donaldson Oil & Dev. Co.'s No. 2 Adams Co., James Hillemmeyer No. 25 Sur., 500 ft. to E line of Sur., 150 ft. to S line of N half of Sur. ... Rig up.

F. E. Tegler's No. 6 J. P. Nixon, NW cor. J. J. Durst Sur. No. 14 ... Location.

Pat Armstrong's No. 1 Crawford, 1,389 ft. N line, 2,650 ft. E line of Sur., 478.6 miles W from Devine ... Rigging up.

Pearson Oil Co.'s No. 4 Mangold, 1,600 ft. W of E line, 1,800 ft. N of S line of Sur. in the I. S. Palmer Sur. No. 20, south from Noonan ... T. D. 765 ft.; drilling plug; make 2,000,000 ft. gas and fresh water.

Mid-Kansas-Gulf's No. 1 Jessie Newton, 150 ft. E of W line, 750 ft. N of S line of 624-ac. tract, E one-third of Maximo Bernald Sur. 762, 15 miles SW from Hondo ... T. D. 1,980 ft.; drlg. in Edwards; no showing.

Pure Oil Co.'s No. 1 Nick F. Fahn in Amos Hudson Sur. No. 587, near NW line of Sur. ... Set and cemented casing; core drilling

Cecil Switzer's No. 1 Zerr, 6 miles west of Hondo ... T. D. 3,788 feet; dry; abandoned.

MILAM COUNTY

Service Oil & Gas Co.'s No. 1 Muldrow, L. Taylor Sur., SE cor. ... Location.

Hill & Bonwell's No. 1 B. Booker, James Welch Sur. ... Fishing 2,020 ft.

Lloyd Oil Corp.'s No. 1 San Clement, Fokes Sur. ... Spudded in.

A. H. Wray's No. 1 D. D. Fowler ... T. D. 1,688 ft.; sidetracked 860 ft. of drill pipe lost in hole; now drlg.

McMULLEN COUNTY

Cowboys Oil Co.'s No. 1 Shiner, H. M. Brewer Sur. ... T. D. 3,700 ft.; coring hard formation.

Southern Crude Oil Purch. Co.'s No. 1 J. B. Baker, 2,310 ft. from S and E lines of Sec. 7 in the F. M. Lowe Sur. ... T. D. 2,568 ft.; drlg. in sand.

NUECES COUNTY

H. Grimm et al's No. 1 A. R. Roberts, Blk. 79, Winter Vegt. Garden Subd., 6 miles NW of Robstown, 12 miles NE Agua Dulce Field ... T. D. 3,145 ft.; cored dry sandy shale.

SAN PATRICIO COUNTY

LaFeria Oil & Gas Co.'s No. 1 C. C. Smith in J. C. White Sur., 690 ft. to N line, 350 ft. to E line ... T. D. 2,252 ft.; tested salt water.

STARR COUNTY

Smith & Adams' No. 1 Welch, Perdernal Sur. ... Standing at 757 ft.; sand showing gas.

UVALDE COUNTY

Waldrop & Welch's No. 1 H. S. Benson, 2 miles NW of Uvalde ... T. D. 770 ft.; set csg.; waiting on cement.

Phantom Oil Co.'s No. 1 Claudt, Sur. 661 ... Drilling water well.

WILLACY COUNTY

Weimer-Richardson's No. 1 Elmore ... T. D. 1,860 ft.; shut down in gumbo.

WILLIAMSON COUNTY

Harlem et al's No. 1 H. H. Stiles, in the J. Bevil Sur., 220 ft. N and 330 ft. E of Sur. ... Drop from reports.

Fred Beaty's No. 1 H. Bland, 450 ft. from N line, 1,000 ft. from E line of tract in the P. Coursey Sur., 1 mile east from Taylor ... T. D. 1,176 ft.; shut down.

C. P. Link's No. 1 T. P. Simmons, 150 ft. W of CEL in the S. Miller Sur. ... Location.

E. L. Chapman's No. 1 Fox in the S. Miller Sur. ... T. D. 1,720 ft.; drlg. in marl.

E. L. Chapman's No. 2 Fox, 150 ft. SW line, 750 ft. NW line of 93-ac. tract in the S. Miller Sur. ... Derrick.

G. B. Peterman's No. 1 J. C. Abbott, 310 ft. from E line, 30 ft. from S line of tract in the S. Miller Sur. ... Dropped from reports.

G. B. Peterman's No. 2 J. C. Abbott, 450 ft. from S and W line of Abbott 100-ac. tract in the Simon Miller Sur., SE from Thrall ... Rigging up.

McNeil et al's No. 1 R. L. Abbott, 330 ft. NW line, 150 ft. NE line of Abbott 15-ac. tract in the S. Miller Sur. ... Spudded in.

Powell & Kykendall's No. 1 Christian Mager in the W Byerly Sur., 150 ft. N and 450 ft. E of farms of 150 acres ... Dropped from reports.

Scomyers Edwards et al's No. 1 J. C. Abbott, 88 ft. from N line, 300 ft. from E line of Abbott 100-ac. tract in the Simon Miller Sur., SE from Thrall ... T. D. 1,496 ft.; drlg. in shale.

Simms Oil Co.'s No. 1 L. E. Lawrence, 150 ft. from N line, 150 ft. from W line of Lawrence 100-ac. tract in the Simon Miller Sur., SE from Thrall ... T. D. 1,585 ft.; drlg. in shale.

L. W. Wilson et al's No. 1 W. L. Lawrence, 150 ft. from W line and C N and S of 35-ac. tract or 1,400 ft. from SW line, 1,450 ft. SW line of H. Owens Sur. ... Spudded in.

WILSON COUNTY

Empire Gas & Fuel Co.'s No. 1 Shook, 1,350 ft. NW line, 7,100 ft. SW line Vincente Zepeda Sur. ... T. D. 1,400; sandy shale; set 1,065 ft., 10 in. casing.

ZAPATA COUNTY

John Pappas' No. 2 Cuellar, Por. 33 and 34 ... T. D. 1,890 ft.; sand 1,880-90 shows gas.

National Oil Co.'s No. 1 D. B. Adams ... T. D. 690 ft.; shut down; lack of water; making considerable gas.

ZAVALA COUNTY

Weigand Bros.' No. 1 W. L. Gates, Hooper & Wade Sur. No. 13, 1,320 ft. S of N line, 1,220 ft. W of NE cor. Sur., about 16 miles S of Batesville ... T. D. 1,700 ft.; drlg. in shale.

Jack Baldwin's No. 1 J. R. Price, in the W. E. Erskin Sur. No. 34 ... Spudded in and shut down.

Southern Crude Oil Purch. Co.'s No. 1 Nat M. Washer in the T. Pinckhardt Sur. No. 180, 1 deg. E. 6,795 ft. from SE cor. ... T. D. 2,971 ft.; drlg. in lime formation; cored anhydrite 2,969-71 ft.

Ike Pryor's No. 1 Martha Campbell, 400 ft. from N line, 5,400 ft. from E cor. of Sur., Sec. 99, in the Martha Campbell Sur., 3½ miles NE from La Pryor. ... T. D. 535 ft.; drlg.

Texas Fuel & Gas Co.'s No. 4 West Sur. 44 ... T. D. 439 ft. (corrected); showing for 1,500,000 ft. gas.

Texas Fuel & Gas Co.'s No. 1 Matthews in upper Byrd Ranch ... T. D. 1,205 ft.; drlg. in shale.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 66)

DE WALT—FORT BEND COUNTY

Humble Oil & Ref. Co.'s No. 3-B Bankers Mortgage ... Drlg. sticky shale 2,078 ft.

Humble Oil & Refg. Co.'s No. 13 Brazos ... Rig.

Humble Oil & Refg. Co.'s No. 14 Brazos ... Drlg. 200 ft.

Humble Oil & Ref. Co.'s No. 13 Sugarland ... Rig.

Humble Oil & Ref. Co.'s No. 9 Nelson ... Drlg shale and lime 2,859 ft.

HUMBLE—HARRIS COUNTY

Hammell Drlg. Co.'s No. 1 Allo ... Location.

Houtex Oil Co.'s No. 1 O'Boyle, west ... Drlg. 900 ft.

Humble Oil & Refining Co.'s No. 11 Williams, south ..... Location.
M. LaRue's No. 1 Cicero ..... Drlg. 1,102 ft.
Rio Bravo Oil Co.'s No. 1 fee, west ..... Drlg. shale and lime 2,400 ft.
South Texas Petroleum Co.'s No. 14 Morris, south ..... Testing shale showing oil.
South Texas Petroleum Co.'s No. 3 Lee ..... Failed to flow, running tubing 5,133 ft.
South Texas Petroleum Co.'s No. 4 Lee, south ..... Location.
Cullen & West's No. 2 Burt, east ..... Drlg. 3,791 ft.
Sun Oil Co.'s No. 4 Bender, west ..... Drlg. 2,900 ft.
The Texas Company's No. 1 Atlantic & Gulf, southeast ... Cem. 9⅝-in. casing 4,400 ft.
The Texas Company's No. 16 Koehler (workover) ..... Pulling screen to deepen.
The Texas Company's No. 24 House, north ..... Drlg. sticky shale, lime and boulders 2,902 ft.

BLUE RIDGE—FORT BEND COUNTY

Humphreys Corp.'s No. 1 West-Schenck (workover) ..... Drilling.
Sinclair Oil & Gas Co.'s No. 1 Blakely ..... Drlg. gumbo and lime 2,137 ft.
Sinclair Oil & Gas Co.'s No. 4 Blakely (workover) ..... Rigging up to deepen.

PIERCE JUNCTION—HARRIS COUNTY

Anderson & Plummer's No. 6 Whitehead (workover) .... Abandoned 6,591 ft.
Marland Oil Co.'s No. 2 Prudential (workover) ..... No report.
Navarro Oil Co. and Texas Exploration Co.'s No. 18 Dooley ..... Drlg. sand 4,200 ft.
Pure Oil Co.'s No. 1 Herman (workover) ..... Swabbed salt water 4,981 ft.; standing.
Pure Oil Co.'s No. 2 Herman, southwest ..... Drlg. sand showing oil 3,903 ft.
Rio Bravo Oil Co.'s No. 12-A Settegast (workover) ..... Rigging up to deepen.
Rio Bravo Oil Co.'s No. 13-A Settegast (workover) ..... Rigging up to pump.
Rio Bravo Oil Co.'s No. 18-A Settegast, west ..... Derrick.
Saxet Gas Co.'s No. 6 Herman, southwest ..... Standing.
Saxet Gas Co.'s No. 7 Herman, southwest ..... Derrick.
Superior Oil Co.'s No. 3-A Whitehead ..... Rigging up to pump 4,228 ft.

LIBERTY—LIBERTY COUNTY

Empire Gas & Fuel Co.'s No. 11 Groggan ..... No report.
The Texas Company's No. 6 Green, northwest ..... Rig.

RULL—LIBERTY COUNTY

W. B. Flynn's No. 8 Harrison (workover) ..... No report.
Empire Gas & Fuel Co.'s No. 31 Barngrover ..... Rig.
Ocean Springs Oil Co.'s No. 1-H Palmer ..... No report.
Republic Production Co.'s No. 57 Dolbear (workover) .... Comp. pumping 250 bbls. fluid, 85 per cent b.s. and water 2,983 ft.
Republic Production Co.'s No. 122 Dolbear ..... No report.
The Texas Company's No. 1 Barrow fee ..... Derrick.
The Texas Company's No. 8 Hannah-Vacuum ..... Drlg. sand and shale 4,836 ft.

BIG CREEK—FORT BEND COUNTY

Benedum & Trees' No. 1 J. F. Ahlers ..... Derrick.
Benedum & Trees' No. 1 Moore ..... Heaving shale 4,179 ft.; cem. 6⅝-in. casing.
Navarro Oil Co.'s No. 4 Hausler ..... To test sand showing oil 3,032 ft.
The Texas Company's No. 4 fee (workover) ..... Cored hard shale 4,141 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 10 Mayes ..... Drlg. hard sand 1,158 ft.
Pure Oil Co.'s No. 4 Lost Lake ..... Drlg. hard sandy shale 3,304 ft.

NASH—BRAZORIA COUNTY

Rycade Oil Corp.'s No. 26 Wisdom ..... Total depth 5,847 ft.; hole caving.

BATSON—HARDIN COUNTY

Ada Belle Oil Co.'s No. 133 Sun ..... No report.
East Batson Oil Co.'s No. 9 Bates ..... No report.

SOUR LAKE—HARDIN COUNTY

Lake View Oil Co.'s No. 8 Minor ..... No report.
Gilbert Oil Co.'s N. 107 Gilbert ..... Derrick.
M. E. Peveto's No. 1 Merchant ..... No report.
The Texas Company's No. 305 fee ..... Bailed dry 791 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 81-B Cotton ..... To pump 527 ft.

GOOSE CREEK—HARRIS COUNTY

Humble Oil & Ref. Co.'s No. 77 Simms-Smith ..... Drlg. shale 5,295 ft.
Jim McMurry's No. 4 Grace Addey ..... Drilling.

SPINDLETOP—JEFFERSON COUNTY

Yount Lee Oil Co.'s No. 61 McFaddin (workover) ..... Drlg. 3,112 ft.
Yount Lee Oil Co.'s No. 79 McFaddin (workover) ..... Pulling screen to deepen.
Yount Lee Oil Co.'s No. 97 McFaddin (workover) ..... Drlg. sandy shale 5,381 ft.
Yount Lee Oil Co.'s No. 124 McFaddin ..... Drlg. sand 4,689 ft.
Yount Lee Oil Co.'s No. 125 McFaddin ..... Comp. flowing 1,400 bbls. fluid, 3 per cent salt water, 2,800 ft.
Yount Lee Oil Co.'s No. 126 McFaddin ..... Drlg. 4,105 ft.
Yount Lee Oil Co.'s No. 127 McFaddin ..... Drlg. 2,417 ft.
Yount Lee Oil Co.'s No. 99 Gladys City ..... Drlg. 5,120 ft.
Yount Lee Oil Co.'s No. 45 Gladys City ..... Fishing liner

WEST COLUMBIA—BRAZORIA COUNTY

Saxet Oil Co.'s No. 3 Hogg ..... Derrick.
The Texas Company's No. 26 Arnold ..... Waiting control head 2,694 ft.

NORTH DAYTON—LIBERTY COUNTY

John A. Deering's No. 6 fee ..... Standing.
Humble Oil & Refining Co.'s No. 1 Jamison, south ... Total depth 4,678 ft.; cemented 7-in. casing 4,200 ft.
Harrison Oil Co.'s No. 1 Jamison ..... Cem. casing to test 4,678 ft.
Harvey Smith's No. 1 Simmons & Brown ..... Drlg. 2,205 ft.
The Texas Company's No. 1 Paraffine fee ..... Gumbo 1,093 ft.; cem. 10-in. casing.

HIGH ISLAND—GALVESTON COUNTY

Gulf Production Co.'s No. 5-A Smith ..... Total depth 4,538 ft.
Marrs McLean's No. 17 Cade ..... No report.
Tom C. Patten's No. 1 Jackson ..... Derrick.

ORCHARD—FORT BEND COUNTY

Gulf Production Co.'s No. 20 Moore ..... Oil sand 3,966-80 ft.; cem. 7-in. casing 3,952 ft.

REFUGIO—REFUGIO COUNTY

Fox-Heflin's No. 1 Fannie Heard ..... Drlg. shale and lime 2,746 ft.
Hamil Drilling Co.'s No. 1 Cable ..... Drlg. 1,612 ft.
Herman F. Heep's No. 1 Vance ..... Sand 5,665-74 ft.; cem. 6⅝-in. casing.
Houston Gulf Gas Co.'s No. 2 Lambert ..... Drlg. sand 3,359 ft.
Houston Gulf Gas Co.'s No. 3 Morgan Shelley ..... Cem. surface casing 477 ft.
Houston Gulf Gas Co.'s No. 3 Morgan-Vance ..... Cem. surface casing 451 ft.
Houston Oil Co.'s No. 1 Rooke Hotel ..... Pulled in derrick 3,702 ft.
Houston Oil Co.'s No. 14 Rooke ..... Drlg. 1,805 ft.
Houston Oil Co.'s No. 1 Tom Heard ..... Drlg. 4,336 ft.
Houston Oil Co.'s No. 1 Carlysle ..... Comp. flowing 200 bbls. pipe line oil 3,717 ft.
Houston Oil Co.'s No. 1 Shelton ..... Drlg. sandy lime 3,012 ft.
Houston Oil Co.'s No. 1 Dorsey ..... Oil sand 3,686-3,702 ft.; cem. 8¼-in. casing 3,686 ft.
Houston Oil Co.'s No. 1 Doughty ..... Drlg. shale and lime 3,201 ft.
Houston Oil Co.'s No. 9 Fannie Heard (workover) ..... Drlg. shale 2,630 ft.
Independent Oil & Gas Co.'s No. 1-C Heard ..... Drlg. shale 3,400 ft.
Independent Oil & Gas Co.'s No. 3 Claude Heard ..... Drlg. shale 2,606 ft.
Independent Oil & Gas Co.'s No. 1 T. P. Shelley ..... To plug back second time after swabbing salt water 5,488 ft.
Independent Oil & Gas Co.'s No. 1 Huddleston ..... Location.
Independent Oil & Gas Co.'s No. 1 Mercy Academy ..... Drlg. 2,900 ft.
Independent Oil & Gas Co.'s No. 1 Helen Reilly ..... Oil sand 3,680-82 ft.; cem. 9⅝-in. casing 3,680 ft.
Independent Oil & Gas Co.'s No. 3 West ..... Cem. surface casing.
Karona Oil Co.'s No. 1 Zarsky ..... Drlg. 500 ft.
Edwin M. Jones' No. 1-A J. F. B. Heard ..... Drlg. sand showing oil 3,660 ft.
Edwin M. Jones' No. 1-A Mitchell ..... Location.
Edwin M. Jones' No. 1 Jeter ..... Oil sand 3,707-10 ft.; cem. 6⅝-in. casing.
Mission Drlg. Co.'s No. 1 O'Brien ..... Drlg. 4,446 ft.
Mission Drlg. Co.'s No. 1 Moss ..... Drlg. 4,446 ft.
T. P. Morgan's No. 1 City ..... Derrick.
Morgan & Morgan's No. 1 Rooke ..... Drlg. 5,400 ft.
Morgan Oil Corp.'s No. 5 City ..... Oil sand 3,688-99 ft.; cem. casing.
Morgan Oil Corp.'s No. 1 Fox, Block 70 ..... Cem. casing to test oil sand.
Morgan Oil Corp.'s No. 1 Tom Heard ..... Testing oil sand 5,479 ft.
Morgan Oil Corp.'s No. 1 Carlysle, Block 2 ..... Drlg. shale 4,901 ft.
Morgan Oil Corp.'s No. 1 Powers ..... Drlg. shale 4,304 ft.
Pearson Properties' No. 1 Rvalls ..... Drlg. sandy lime 4,846 ft.
Ed Price et al's No. 1 Mission River ..... Shut down for repairs 2,704 ft.
Refugio Oil Corp.'s No. 1 Wheeler heirs ..... Comp. flowing 960 bbls. 3,686 ft.
Rutherford-Traylor Oil Co.'s No. 1 Cable ..... Derrick.
Saxet Oil Co.'s No. 2 Cable ..... Abandoned rig.
Saxet Oil Co.'s No. 2 Ryals ..... Location.
Saxet Oil Co.'s No. 3 Holmes Heard (old well) ..... Cem. casing to test gas sand 3,692 ft.
Sun Oil Co.'s No. 3 Buckley, Lot 5, Blk. 2 ..... Tested showing of oil 3,693 ft.; resetting screen.
The Texas Company's No. 1 Shelton ..... Drlg. shale and lime 5,681 ft.
Union Producing Co.'s No. 3 O'Brien ..... Drlg. 359 ft.
Union Producing Co.'s No. 1 Ben Shelton ..... Trying to kill gas to abandon 5,800 ft.
Union Producing Co.'s No. 4 Shelley ..... Cem. 12½-in. casing 466 ft.
Union Producing Co.'s No. 3 Powers ..... Spudded.
Union Producing Co.'s No. 1-A Rose Lambert ..... Testing oil sand 5,500 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co. and Gulf Ref. Co.'s No. 25 Miller ..... Bailed some fluid 3,803 ft.; sanded.
Vacuum Oil Co. and Gulf Ref. Co.'s No. 26 Miller ..... Derrick.
Vacuum Oil Co. and Gulf Ref. Co.'s No. 27 Miller ..... Derrick.
Vacuum Oil Co. and Gulf Ref. Co.'s No. 8 Bordages .... Bailed dry 4,401 ft.; resetting screen.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 1 Verdine ..... No report.
Calcasieu Oil Co.'s No. 5 Caldwell ..... No report.
Duhon Oil & Mineral Co.'s No. 1 Duhon ..... Derrick.
Sunshine Oil Co.'s No. 6 Ellender ..... Drlg. 356 ft.
Rex Petroleum Corp.'s No. 1 Duhon ..... Bailed dry; standing.
Rycade Oil Corp.'s No. 1 Gulf Land ..... Drlg. hard lime and shale 4,734 ft.
Rycade Oil Corp. and Humble's No. 5 Gulf Land ..... Location.
The Texas Company's No. 6 State, Calcasieu Lake ..... No report.

JENNINGS—ACADIA PARISH

Cline, Smith & Cline's No. 9 Conklin ..... No report.
The Texas Company's No. 5 Rayne heirs, King tract .... Setting casing approximately 7,000 ft.; to test.
Yount Lee Oil Co.'s No. 8 Houssiere-Latrielle, Section 47-9s-2w ..... Drlg. 5,949 ft.
Yount Lee Oil Co.'s No. 6 Crowley ..... Drlg. 3,106 ft.

EDGERLY—CALCASIEU PARISH

Rex Petroleum Co.'s No. 11 Hunter ..... No report.
Strange Oil Co.'s No. 1 Koonce ..... Rigging up to pump 3,774 ft.

VINTON—CALCASIEU PARISH

Marrs McLean's No. 4 Gray (workover) ..... No report.
Vinton Petroleum Co.'s No. 5 Matilda Gray ..... Drilling.
Vinton Petroleum Co.'s No. 6 Matilda Gray ..... Drilling.

BAYOU BOUILLON—ST. MARTIN PARISH

Rycade Oil Corp.'s No. 9 Bouillon fee ..... Drlg. broken sand 3,176 ft.
Rycade Oil Corp.'s No. 5 Atchafalaya fee ..... Total depth 4,310 ft.; cem. 9⅝-in. casing.
The Texas Company's No. 2 St. Martin Land Co. ..... Drlg. shale and lime 5,218 ft.

STARKS—CALCASIEU PARISH

J. O. Davis' No. 1 Industrial ..... Standing 3,775 ft.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 8 Yount Lee (workover) ..... Total depth 5,569 ft.; cem. 5⅝-in. casing.
Pure Oil Co.'s No. 9 Yount Lee ..... Drlg. soft sand 4,129 ft.

ANSE LA BUTTE—ST. MARTIN PARISH

Yount Lee Oil Co.'s No. 1 Hebert ..... Drlg. 5,206 ft.

SORRENTO—ASCENSION PARISH

Gulf Refining Co.'s No. 17 United Land Co. ..... Drlg. shale 4,003 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Black Oil Co.'s No. 1 Lancashire, near Sealey ..... Drlg. gumbo 2,456 ft.
Empire Gas & Fuel Co.'s No. 1 Boyd, San Felipe ..... Derrick.
O'Hara et al's No. 1 Batla, near Raccoon City ..... Drill stem stuck 3,450 ft.
McInnery et al's No. 1 McDay, west of Kinney ..... Shut down 500 ft.

BRAZORIA COUNTY

The Texas Company's No. 1 Ewin, Harvey Little Sur. .... Rig.
Faust et al's No. 5 Faust ..... Drlg. gumbo 3,822 ft.
Rucks & Patterson's No. 1 Hunter, southwest of Hoskins.. Shut down 1,045 ft.
Rycade Oil Corp.'s No. 1 Rapid City, Henry Austin Sur... Location.
Shell Petroleum Corp.'s No. 1 Blakely-Winston, Danbury ..... Drlg. salt water sand 4,579 ft.
Steel & Strickland's No. 1 Lockridge ..... Rig.
Word Drlg. Co.'s No. 1 Proctor, west of Hoskins Mound.. Drlg. gumbo 2,415 ft.

CHAMBERS COUNTY

Shell Petroleum Corp.'s No. 1 Herff, Moss Bluff ..... Rig.
Sloan Prospecting Co.'s No. 1 Ulrich, Hannah Nash Sur. .. Location.

FORT BEND COUNTY

Gulf Production Co.'s No. 1 Brazos Valley, Clodine ..... Drlg. gumbo 4,920 ft.
Pure Oil Co.'s No. 1 Jackson Brown, Barrett and Harris Sur. ..... Derrick.

GRIMES COUNTY

Cranfill & Reynolds Oil Co.'s No. 1 Baylor, southeast Navasota ..... Drlg. gumbo 1,010 ft.

HARRIS COUNTY

Baldwin and associates' No. 1 Kitzman, Cypress ..... Shut down 4,100 ft.
A. F. Belunek's No. 1 Thompson ..... Rig.
Higgins Oil & Fuel Co.'s No. 1 Sladous, Mykawa ..... Sand 5,340 ft.; reaming.
Humble Oil & Ref. Co.'s No. 7 Warren, Hockley ..... Drlg. sticky shale 4,371 ft.
Humble Oil & Ref. Co.'s No. 2 Minnetex ..... Standing with casing cem. 1,177 ft.
Humble Oil & Ref. Co.'s No. 1 Sladous (workover) ..... Set 4 joints 4½-in. screen 4,906 ft.; bailing.
Humble Oil & Ref. Co.'s No. 2 Woodburn ..... Drlg. sticky shale 5,231 ft.
Rich et al's No. 1 Highlands ..... Derrick.
Martin, Drake & Jones' No. 1 Haney ..... No report.
Watts Brothers' No. 1 Hubert, Mykawa ..... Drlg. 4,900 ft.

JEFFERSON COUNTY

Bayou Oil Co.'s No. 1 Hooks-Borduge ..... Rigging.
Gulf Production Co.'s No. 8 Bordages ..... Drlg. 6,001 ft.
Gulf Production Co.'s No. 1-A Guy Junker, Fannett ..... Drlg. 5,703 ft.
Gulf Production Co.'s No. 13 Thomas, Fannett ..... Drlg. 3,806 ft.
Gulf Production Co.'s No. 5 Burrell, Fannett ..... Started drilling.
Stillwell Oil Co.'s No. 1 Brinkman ..... No report.
The Texas Company's No. 1 Fitzhugh, Big Hill ..... Washing; total depth 5,853 ft.
Westbury Oil Co.'s No. 1 West, Choate Sur. ..... No report.

LIBERTY COUNTY

Gulf Production Co.'s No. 1 Welser ..... Drlg. 6,110 ft.
Gulf Production Co.'s No. 3 Boyt, Hankamer ..... Tested salt water 4,681 ft.; drlg. 4,736 ft.
Gulf Production Co.'s No. 1 McFaddin, Moss Bluff ..... Location.
Humble Oil & Ref. Co.'s No. 6 Sterling, Moss Bluff .... Shut in producer.
Cranfill & Reynolds Oil Co.'s No. 7 Esperson, Sheeks ..... Comp. flowing 650 bbls. oil on ¾-in. choke 2,326 ft.
Cranfill & Reynolds Oil Co.'s No. 8 Esperson, Sheeks ..... Drlg. gumbo 1,730 ft.
Cranfill & Reynolds Oil Co.'s No. 9 Esperson, Sheeks ..... Derrick.
Cranfill & Reynolds Oil Co.'s No. 2 Moores Bluff, Sheeks.. Rig.
Yount Lee Oil Co.'s No. 2 Moores Bluff, Sheeks ..... Drill pipe stuck 6,689 ft.; sidetracking 2,790 ft.

MATAGORDA COUNTY

Cockburn et al's No. 1 Hawkins, Shepherds, Mott ..... Drlg. gumbo and lime 4,290 ft.

MONTGOMERY COUNTY

Kelley-Kaker's No. 2 Guergus ..... No report.

ORANGE COUNTY

Gulf Production Co.'s No. 1 J. H. Starks, Port Neches ... Abandoned 6,585 ft.
Gulf Production Co.'s No. 1 M. H. Starks, Port Neches ... Location.
The Texas Company's No. 2 Kuhn, Port Neches ..... Derrick.
The Texas Company's No. 2 Stark, Port Neches ..... Location.

WALLER COUNTY

Kirby Petroleum Co.'s No. 1 Davis, San Felipe ..... To abandon 2,941 ft.; hole cratered.
W. P. Morris' No. 1 Chapman, Donoho Sur. ..... Drlg. shale 2,039 ft.

SOUTH LOUISIANA

ACADIA PARISH

Calcasieu Oil Co.'s No. 1 Hays, Sec. 10-8s-1w ..... Drlg. 1,000 ft.

ASSUMPTION PARISH

Gulf Refining Co.'s No. 1 Armilise, Napoleonville ..... Drlg. shale 5,640 ft.

CALCASIEU PARISH

Wilfred Lahay's No. 2 James ..... No report.
Shell Petroleum Corp.'s No. 1 Heyd, Iowa ..... Location.
Calcasieu Oil Co.'s No. 1 Moss, Sec. 8-10s-9w ..... Location.

CAMERON PARISH

Shell Petroleum Corp.'s No. 15 Watkins, Black Bayou ... Location.
Shell Petroleum Corp.'s No. 14 Watkins, Black Bayou ... Building derrick.
The Texas Company's No. 5 Calcasieu Lake, Calcasieu Lake Dome ..... Building derrick.
Vacuum Oil Co.'s No. 1 Cameron Meadows, Sec. 21-14s-13w ..... Drlg. plug at 1,275 ft.; total depth 1,309 ft.

IBERIA PARISH

The Texas Company's No. 4 Vermillion Bay ..... Abandoned in salt 6,125 ft.

IBERVILLE PARISH

Shell Petroleum Corp.'s No. 4 Wilbert, White Castle .... Drlg. sticky shale 2,050 ft.
Standard Oil Co.'s No. 4 Schwing, Bayou Blue ..... Rig.
Standard Oil Co.'s No. 5 Wilbert, Bayou Blue ..... Derrick.
Standard Oil Co.'s No. 6 Wilbert, Bayou Blue ..... Rig.
Standard Oil Co.'s No. 1 Case, Bayou Des Glaise ..... No report.

JEFFERSON DAVIS PARISH

Pure Oil Co.'s No. 1 May, Sec. 1-10s-5w ..... Fishing drill pipe 3,970 ft.
Yount Lee Oil Co.'s No. 1 Courtney, Welsh ..... Rig.

LA FOURCHE PARISH

Gulf Refining Co.'s No. 1 City of New Orleans, Bay Champagne ..... Drlg. sticky shale 5,200 ft.

PLAQUEMINE PARISH

Humble Oil & Ref. Co.'s No. 1 Cockrell-Moran, Lake Grand Ecaille ..... Sandy shale 1,728 ft.; testing.
Humble Oil & Ref. Co.'s No. 1 Lake Washington, Lake Grand Ecaille ..... Drlg. hard sand 4,304 ft.
The Texas Company's No. 4 State, Garden Island Bay ... Derrick.

ST. LANDRY PARISH

Elbof Exploration Co.'s No. 1 Ledoux, Eunice ..... No report.
Herbert-Baker Oil Co.'s No. 1 Fisher, Sec. 10-3S-4e ..... No report.
Gulf Refining Co.'s No. 3 Gaudet, Port Barre ..... Drlg. 459 ft.
Gulf Refining Co.'s No. 2-A Hoskins, Port Barre ..... Rig.
The Texas Company's No. 5 Botney Bay, Port Barre .... Drlg. 1,129 ft.
The Texas Company's No. 6 Botney Bay, Port Barre .... Drlg. 3,271 ft.

ST. MARTIN PARISH

The Texas Company's No. 1 fee, Hager Dome ..... No report.
The Texas Company's No. 3 fee, Hager ..... Location.
The Texas Company's No. 2 St. Martin ..... See Bayou Bouillon.
The Texas Company's No. 1 Iberville, Hager ..... No report.

ST. MARY PARISH

Louisiana Land & Exploration Co.'s No. 2 Clark, Berwick.. No report.
Pure Oil Co.'s No. 1 Wax Lake, Sec. 12-17s-9e ..... Rigging.
Vacuum Oil Co.'s No. 1 Zenor, Patterson ..... Drlg. sandy shale 4,181 ft.

TERREBONNE PARISH

Charles Paggi's No. 2 Evergreen, Sec. 145-15s-16e ..... No report.
The Texas Company's No. 4 State-Bay St. Elaine ..... Rig.
The Texas Company's No. 1 La. L. & E. Co., Bay Junope.. Location.
The Texas Company's No. 2 La. L. & E. Co., Dog Lake... Total depth 6,297 ft.; twisted off 35 fourbles drill pipe; abandoned.
The Texas Company's No. 2 State, Lake Pelto ..... Location.
The Texas Company's No. 3 State, Lake Pelto ..... Oil sand 4,278-4,389 ft.; cemented 9¼-in. casing 4,297 ft.
The Texas Company's No. 2 State, Caillou Island ..... No report.
The Texas Company's No. 3 State, Caillou Island ..... Location.
The Texas Company's No. 3 State, Lake Barre ..... Oil sand 3,863 ft.; cem. casing 3,836 ft.
The Texas Company's No. 4 State, Lake Barre ..... Location.
The Texas Company's No. 3 La. L. & E. Co., Four Isle ... Location.

SOUTHWEST TEXAS

(Continued from Page 64)

pleted 36,000,000 feet of gas, 540 pounds rock pressure.

ABANDONED TESTS

Cole Pool—Webb County

Magnolia Petroleum Co.'s No. 1 S. Perez, Survey 460 J. Poitevent, 1,980 feet north line, 660 feet west line; total depth 5,393 feet.

Pettus Field—Bee County

Union Producing Co.'s No. 6 Ray, 1,300 feet east line, 755 feet south line of survey, in the P. Miller Survey; total depth 5,060 feet; dry and abandoned in shale.

Cartwright Pool—Live Oak County

Houston Oil Co.'s No. 2 J. B. Dunning, M. B. Kilvin Survey, 1,445 feet north of No. 1; total depth 5,135 feet; hole junked and abandoned.

Darst Creek—Guadalupe County

Humble Oil & Refining Co.'s No. 2 A. E. Dowdy, 150 feet from south line, 1,050 feet from east line of tract, in the J. C. Darst Survey; total depth 2,654 feet; dry and abandoned.

Magnolia Petroleum Co.'s No. 1 H. G. Goldman, 1,275 feet from northeast line, 150 feet from northwest line of farm, in the J. B. Alexander Survey; total depth 3,262 feet; dry and abandoned.

Stroube & Stroube's No. 2, 3 and 4 Rand Miller, in J. B. Alexander Survey; dropped from reports until work is begun.

The Texas Company's No. 2 L. Anderson, in the Jacob Darst Survey, 150 feet to north and east lines; total depth 685 feet; shut down; dropped from reports until work is resumed.

The Texas Company's No. 2 and 3 Dallas Wilson, Darst Survey; dropped from reports until work is resumed.

NEW OPERATIONS

Darst Creek—Guadalupe County

Empire Gas & Fuel Co.'s No. 1 Henry Willie, 150 feet north line, 150 feet west line of tract, in the J. Darst Survey; spudded in.

Gulf Production Co.'s No. 2 C. Anderson, in the J. Darst Survey, 450 feet north line, 750 feet east line of tract; total depth 1,500 feet; drilling in shale.

Humble Oil & Refining Co.'s No. 11-A Denman, 1,921 feet west and 150 feet north of southeast corner of A. S. Emmett Survey; derrick.

Buchanan Pool—Caldwell County

Sun Oil Co.'s No. 1 Cude, 150 feet each way out of northeast corner of 33 acres, in the William Spillers Survey; total depth 2,013 feet.

Bruner Pool—Caldwell County

Humble Oil & Refining Co.'s No. 4-B J. R. Tiller 80 acres, south central part of lease, in the J. Hinds Survey; location.

Kohler Pool—Duval County

Simms Oil Co.'s No. 9 Dinn, 660 feet east line, 660 feet south lines of NW SE, Survey 143; rigging up.

Jennings Pool—Zapata County

W. R. Shankle's No. 1 E. Gutierrez, 150 feet northeast line, 3,014 feet northwest line, Share 4, Fansler Partition, Comitas grant; location.

DRILLING ACTIVITY

Dobrowolski Pool—Bexar County

Penn-Tex Oil Co.'s No. 1 Dobrowolski, 150 feet from south line, 150 feet from east line of west 67 acres of Dobrowolski 147-acre tract, in the M. Menchaca Survey; total depth 400 feet; shut down.

Pettus Field—Bee County

Union Producing Co.'s No. 5 George Ray, 1,750 feet southeast line, 250 feet northeast line of survey, in the Thomas Anson Survey, northeast offset to No. 1 McKinney, 3 miles northeast of Pettus; total depth 3,975 feet; swabbing in.

Lasater Pool—Brooks County

Houston Oil Co.'s No. 1 Holbein-Wormser, in the Palo Blanco de Maguellas Survey, 330 feet north line, 6,540 feet east line; total depth 4,617 feet; drilling in gumbo and boulders.

Nursery Pool—Victoria County

Humble Oil & Refining Co.'s No. 3-A Jay J. Welder, in the D.L.&C. Survey, 1,634 feet southeast line, 736 feet southwest line, 1½ miles northeast from Nursery; total depth 5,896 feet; rigging up to drill deeper.

Darst Creek—Guadalupe County

J. S. Abercrombie and Harris Oil Co.'s No. 4 Thomas Dix, in the J. R. Robinson Survey; location.

J. S. Abercrombie and Harris Oil Co.'s No. 5 Thomas Dix, 300 feet north of No. 3, in the J. R. Robinson Survey; location.

J. S. Abercrombie and Harris Oil Co.'s No. 6 Thomas Dix, 300 feet north of No. 2, in the J. R. Robinson Survey; location.

Empire Gas & Fuel Co.'s No. 1 Knoblock, 150 feet northeast and southeast lines of 40-acre tract, in the J. R. Robinson Survey; total depth 2,000 feet; drilling in shale.

Gulf Production Co.'s No. 5 Dix-McKean, 162 feet from east line, 150 feet from south line of tract, in the J. R. Robinson Survey; total depth 2,610 feet; drilling in.

Gulf Production Co.'s No. 6 Dix-McKean, 445 feet from east line, 150 feet from southeast line of tract, in the J. R. Robinson Survey; total depth 2,615 feet; completing.

Gulf Production Co.'s No. 7 Dix-McKean, 150 feet from south and east lines of tract, in the J. R. Robinson Survey; total depth 2,600 feet; drilling in.

Gulf Production Co.'s No. 8 Dix-McKean, 300 feet northeast of No. 3, in the J. R. Robinson Survey; total depth 2,496 feet; drilling in Georgetown.

Humble Oil & Refining Co.'s No. 1 Baker, in the J. C. Darst Survey, 150 feet north line, 183 feet west line of tract; location.

Humble Oil & Refining Co.'s No. 2 Baker, 472 feet north line, 183 feet east line of tract; location.

Humble Oil & Refining Co.'s No. 4 D. D. Baker, 700 feet from east line, 550 feet north line of tract, in the J. C. Darst Survey; total depth 2,050 feet; drilling in shale.

Humble Oil & Refining Co.'s No. 10-A Denman, 1,100 feet from south line, 1,250 feet from west line of tract, in the A. S. Emmett Survey; total depth 1,500 feet; drilling in shale.

Humble Oil & Refining Co.'s No. 1 Sally Wilson, in the J. C. Darst Survey, 150 feet from north line, 183 feet from west line; location.

Humble Oil & Refining Co.'s No. 4 Sally Wilson, 500 feet east of No. 2, 150 feet north line of tract, in the Jacob Darst Survey; derrick.

Humble Oil & Refining Co.'s No. 1 Yates-Wilson, in the Jacob Darst Survey, 150 feet from north and west lines of tract; location.

Jake Jarman and others' No. 1 Fee, 490 feet from north end of 20-foot strip off east end of D. D. Baker 60-acre tract, in the Jacob Darst Survey; total depth 2,602 feet; recementing casing.

Magnolia Petroleum Co.'s No. 7 Thomas Dix, 450 feet from southwest and northwest lines of 50-acre tract, in the J. R. Robinson Survey; total depth 2,533 feet; set casing.

Magnolia Petroleum Co.'s No. 1 L. V. Echols, in the James Hodges Survey, 150 feet to northwest and southwest lines of farm, 3,650 feet to southwest line, 3,220 feet to northwest line of survey; total depth 2,715 feet; shut down.

Magnolia Petroleum Co.'s No. 2 L. V. Echols, in the James Hodges Survey, 150 feet to southwest and southeast lines of lease, 300 feet southeast of No. 1 well, 164½-acre tract; total depth 2,845 feet; shut down, dry.

Magnolia Petroleum Co.'s No. 2 S. M. Roamel, 150 feet each way from northeast corner of 40-acre tract, in the James Hodges Survey; location.

Simms Oil Co.'s No. 3 C. W. Manford, 300 feet southwest of No. 1, 225 feet from southeast line; location.

The Texas Company's No. 4-B Knoblock, total depth 1,600 feet, drilling in shale.

The Texas Company's No. 5-B Knoblock, total depth 400 feet, drilling.

The Texas Company's No. 6-B Knoblock, total depth 1,250 feet, drilling in shale.

The Texas Company's No. 2-A Knoblock, total depth 2,160 feet, drilling in Taylor marl.

The Texas Company's No. 3-A Knoblock, total depth 600 feet, drilling.

The Texas Company's No. 4-A Knoblock, total depth 1,140 feet, drilling in shale.

The Texas Company's No. 2 W. R. Posey, 450 feet northeast line, 150 feet northwest line of lease, in the J. R. Robinson Survey; total depth 2,595 feet; drilling in.

Trinity Drillers' No. 1 L. L. White (81 acres), 1,398 feet from north line, 750 feet from east line, in the M. Miller Survey; location.

United North & South Development Co.'s No. 3 P. Roamel, in the J. R. Robinson Survey; total depth 1,890 feet; drilling in shale.

Cole Pool—Duval County

Cole Petroleum Co.'s No. 68 Rosa Benavides, 660 feet northeast line, 660 feet northwest line, Cole subdivision, Mariano Arispe grant, Block 11, Survey 14; spudded in.

Magnolia Petroleum Co.'s No. 6 Servando Benavides, 330 feet northwest line, 380 feet northeast line, Block 7, Survey 174, O'Hern-Seacord subdivision; total depth 2,820 feet; set 6⅝-inch casing at 2,814 feet; sand 2,814-20 feet; drill stem test showed eight joints of oil.

Kohler Pool—Duval County

Everett Suladie's No. 1 Peters, 165 feet south line, 230 feet west line, Survey 33; total depth 1,695 feet; drilling.

Allied Gas Co.'s No. 1 J. T. Dinn, 1,500 feet south lnie, 1,500 feet east line, Survey 668; total depth 2,415 feet; sand tested dry at 2,412 feet; drilling.

Humble Oil & Refining Co.'s No. 41 Kohler, 2,970 feet south line, 330 feet east line, Survey 165; location.

Humble Oil & Refining Co.'s No. 43 Kohler, 825 feet north line, 165 feet west line, Survey 169; rigging up.

Schoolfield-O'Byrne—Duval County

C. E. Long (Shell) No. 5 Hahl, 150 feet north line, 630 feet east line, Block 26, Survey 250; location.

Randado Pool—Jim Hogg County

Magnolia Petroleum Co.'s No. 1 Weil, Block 2, Survey 5, 660 feet north line, 349 feet east line; total depth 3,530 feet; hard rock.

Roma Pool—Starr County

The Texas Company's No. 1-B V. C. de Guerra, 150 feet south line, 150 feet west line of north 1,173 acres, Share 92, Porcion 68 of Partition Porcion 67-68-69-70-71-72, Jurisdiction of Mier; total depth 1,245 feet; drilling.

Albercas Pool—Webb County

O. W. Killam's No. 1 Bruni, 575 feet north line, 238 feet east line, Albercas grant, Block 33; spudded in.

Carolina-Texas—Webb County

George S. Marshall's No. 2 Webster, 810 feet south line, 1,170 feet west line, Survey 684; total depth 2,050 feet; drilling.

W. R. Shankle's No. 2 Webster, Survey 684, 1,170 feet west line, 150 feet south line; rigging up.

Magnolia-Cole Pool—Webb County

Magnolia Petroleum Co.'s No. 4 Brennan-Benavides, in the Mariano Arispe grant, corner Blocks 16-17-52-53, Myrtle E. Hale subdivision; total depth 3,130 feet; coring.

Cole Pool—Webb County

O. W. Killam's No. 18 Bruni, total depth 2,035 feet, drilling.

E. H. Buckner's No. 1-A Rosa Benavides, 660 feet northwest line, 660 feet northeast line, Cole Petroleum Co. subdivision, Mariano Arispe grant, Block 5, Survey 14; total depth 1,613 feet; sand 1,609-13 feet; salt water; standing.

W. E. May's No. 1 Volpe, 660 feet east line, 840 feet south line, Block 15, Survey 694; total depth 2,250 feet; drilling.

Magnolia Petroleum Co.'s No. 2 King-Harper, Block 2, Survey 323, 660 feet north and east lines; location.

Jennings Pool—Zapata County

Livingston & Twiss' No. 1 Trevino, 150 feet north line, 150 feet west line, Block 7, Survey 66; rigging up.

Claggett & Blair's No. 3 Trevino, 500 feet east line, 150 feet north line, Block 1, Survey 66; location.

A. L. Edgington's No. 1 Trevino, 150 feet south line, 150 feet east line, Block 26, Survey 412; total depth 50 feet; drilling.

Killam-Duggan's No. 12 Cuellar, 150

feet southwest line, 420 feet north line, Survey 278; drilling at 1,520 feet.

O. W. Killam's No. 20 Cuellar, total depth 700 feet, drilling.

O. W. Killam's No. 17 Cuellar, 600 feet north line, 940 feet east line, 160-acre Cuellar tract out of 1,772-acre Cerrito Blanco grant; derrick.

R. F. Blankenship's No. 2 Garza, Block 2, Survey 413, 425 feet west line, 425 feet north line; total depth 200 feet; drilling.

R. F. Blankenship's No. 2 Montemayor, 820 feet east line, 150 feet north line, Block 7, Survey 64; total depth 250 feet; standing.

CANADIAN FIELDS

(Continued from Page 70)

to get the Madison, being about 4 miles south of the Home producers, and is the second deepest test in the Turner Valley Field. A show of wet gas was tested about 500 feet in the lime but was found unsatisfactory.

Reports that Imperial Oil, Ltd., is to curtail its drilling operations in the Turner Valley have been officially denied by J. H. McLeod, western production manager. The practice of offsetting producing wells will be continued, and approximately the same footage drilled as in 1929, when 90,000 feet of hole was cut.

In Section 20-19-2w5, Baltac Oils' No. 1, LSD 13, after a unsatisfactory production test about 272 feet in the lime, is again drilling at 5,709 feet. Home's No. 3 producer, which was temporarily frozen off, has blown back into normal production.

In the central area, Dalhousie Oil Co.'s No. 7, LSD 11, Section 18-20-2w5, got the top of the Madison lime at 5,000 feet and is cementing 6¼-inch casing at 5,005 feet. The location is about a mile northwest of the Home group and about a mile south of Royalite's No. 6 producer, and is the only test actively drilling for Dalhousie Oil Co., which is a Royalite subsidiary holding large acreage scattered over the Turner Valley structure. The company has three producing wells, Nos. 1, 5 and 6, which in January delivered 3,317 bbls. of naphtha and crude.

Royalite Oil Co.'s No. 23, NW, Section 31-19-2w5, is building new rig to resume at 5,331 feet. Royalite's No. 7, LSD 3, Section 13-20-2w5, is fishing at 4,208 feet, preparatory to deepening. Royalite's No. 12, LSD 3, Section 13-20-3w5, is standing cemented at 5,419 feet. Royalite's No. 16, LSD 2, Section 12-20-3w5, is drilling at 6,080 feet. Royalite's No. 19, LSD 5, Section 6-20-2w5, is standing cemented at 4,637 feet.

South Turner Valley

In the South Turner Valley, Freehold Oil Corp.'s No. 2, LSD 8, Section 20-19-2w5, got the lime at 4,217 feet. Ten-inch pipe was run 20 feet in the lime. The hole will be completed in the lime with cable tools and control head. This is the only 10-inch hole yet drilled into the lime. Freehold's No. 3, same LSD, which recently spudded in, is standing cemented at 90 feet.

Wellington Oils' No. 1, LSD 1, Section 20-19-2w5, is drilling 31 feet in the lime at 4,688 feet, with a small wet gas show. Calmont Oils' No. 2, LSD 11, same section, at 4,843 feet, has installed equipment to drill into production. Calmont's No. 11 has spudded in, and No. 12 is rigged up. Mill City Petroleums' No. 1, LSD 14, is drilling in the top of the lime at 4,525 feet with a fair show of wet gas.

Central Field

In the Central Turner Valley, Freeman-Lundy Syndicate's No. 1, LSD 10, Section 1-20-3w5, is drilling in the lime at 4,963 feet with about 500,000 feet of wet gas. Okalta Oils' No. 1, LSD 1, Section 1-20-3w5, recently blew back into production and is making 200 bbls. a day.

North Turner Valley

In the North Turner Valley area, the center of interest is Model Oils' No. 1, LSD 8, Section 22-20-3w5, which is drilling out cement in the top of the lime at 5,810 feet. The north end has for some time been relatively inactive, with most of the tests shut down for the winter, and Model's No. 1 is the only test there drilling in the lime.

Anaconda Oil Co.'s No. 1, LSD 16, Section 22-20-3w5, is in the second McDougall-Segur sand at 2,510 feet with 13⅜-inch casing run to 2,350 feet. The well has a little gas.

Moose Dome Showing

In the foothills north and west of Calgary, reports of an oil showing in Moose Oils' No. 1, LSD 16, Section 29-22-6w5, have attracted considerable attention. It it closer in to the mountains than the Turner Valley Field, and there is more pronounced evidence of folding. A recent visit to the field showed Moose Oils' No. 1 shut down to repair damage caused by recent high winds. The well is harnessed with control valves, with about 500,000 feet of gas being burned at the end of a long waste pipe. At 2,245 feet depth the formation gives little indication of porosity. A quantity of 43 gravity crude entered the hole following shooting to loosen a string of tools at this depth. It is uncertain whether this show comes from a break in the Devonian limestone below or from a stray fissure to one side. It is a light green crude, in considerable though not commercial quantity.

Along the gulch of Canyon Creek, the cross section of the formation in this area cut by the creeks and the Elbow River is plainly discernible. Banff shales on top of the Devonian limestone were plainly visible in an outcropping about a mile south and slightly west of Moose Oils' No. 1. Every contract including the dolomite limestone, Fernie, Kootenay, Dakota, Benton and Belly River was plainly visible at one point or another along the road west of Bragg Creek.

About 5 miles southeast of Moose Oils' No. 1, Herron Petroleums' No. 1, NW, Section 13-22-6w5, is at 1,410 feet and underreaming. A strong water flow came in at around the 1,400-foot level, and this is being got under control before drilling deeper. From present indications, both these tests will have to drill to the porous horizon of the Devonian to obtain production. Outcroppings to the west indicate a porous horizon somewhat below the present level of Moose Oils' No. 1.

Drilling in the Foothills

Warner Oils' No. 3, LSD 3, Section 28-18-3w5, is resuming at 2,365 feet after cementing against caving, with another small show of heavy crude at 2,315 feet. Calgary Development and Production Corp.'s No. 1, LSD 10, Section 21-19-3w5, entered the Dalhousie sands at 2,210 feet and is drilling around 2,230 feet with a wet gas flow estimated at 1,000,000 feet a day. The log indicates the lime will be struck around 2,600 feet. Bonanza Oils' No. 1, LSD 4, Section 14-19-3w5, is financed for a test to spud in next month. Innerfold Oils' No. 1, LSD 2, Section 6-20-3w5, is drilling in the McDougall sands at 2,805 feet, with a small oil show reported.

Shareholders of Waite Valley Holdings, Ltd., of Calgary, at their meeting recently favored continued negotiations for a merger of companies operating on the Waite Valley structure. The following officers were elected: President, G. W. Skeene; vice president, S. H. Adams; secretary, J. D. Whetham; directors, Dr. L. A. Maxwell, John I. McFarland, Stanley Davies, Robert Wilkinson, all of Calgary, and P. W. MacDowell of Toronto. The companies involved in the proposed merger include two holding companies, Waite Valley Holdings, Ltd., and Westfield Oils, Ltd., and two drilling companies, Brock Petroleums, Ltd., with a test shut down at 3,710 feet, and Gibraltar Oils, Ltd., with a test standing at 1,400 feet.

In the Morley Reserve area, Wabash Oils' No. 1 is reported drilling at 3,027 feet with some gas flow from the Devonian limestone. All other tests on this structure are inactive.

On the Pincher Creek structure, Weymarn Petroleums' No. 2, LSD 5, Section 7-6-1w5, is unofficially reported to have got a show of light crude below 1,100 feet and a second show around 1,400 feet, with some gas.

Red Coulee Field

In southern Alberta, the Red Coulee Field has come to the front with a second producing well on the Canadian end of the international structure. Vanalta Oils' No. 2, LSD 3, Section 4-1-16w4, offsetting Vanalta's No. 1 discovery well 440 feet to the west, got the Sunburst sand at 2,425 feet with a gas flow estimated at 1,500,000 feet a day. Drilling was continued. It is claimed the Sunburst sand proved only a few feet thick, as against a normal thickness of 30 to 40 feet. Drilling was continued and the test got the top of the Vanalta sand at around 2,465 feet, continuing to about 2,480 feet. Production at this depth is estimated around 100 bbls. a day. No. 2 has logged closely with No. 1, and they are about on a par in regard to initial production. No. 2 may be drilled a little deeper into the sand.

On the Montana side, Monalta Oil Co.'s No. 2 Buckley is reported drilling at 2,290 feet after cementing casing at 2,250 feet. The Thomas well has resumed drilling from 150 feet after a shutdown. Hannah-Porter-Cosmos' No. 1 is drilling through cement after a second water shut-off, the 6¼-inch being set at 2,484 feet on top of the Vanalta sand. If the cementing proves satisfactory, the test should get production within a few days. Mid-Continent's No. 1, Section 2-37-4w, is repairing pump, with the well flowing about 70 bbls. on its own pressure. Mid-Continent's No. 2, 300 feet south of No. 1, has spudded in.

On Alberta Side

On the Alberta side, Vanalta's No. 3 will probably be started this month, and will likely be drilled close to the two earlier producers. Ko-Top Oils' No. 1, Section 2-1-17w4, is at 1,650 feet and installing new band wheel preparatory to fishing for tools lost 150 feet off bottom. Southern Alberta Exploration's No. 1, LSD 8, Section 3-1-16w4, is moving in casing and machinery and is expected to spud in this month. T. B. Williams, consulting geologist, is reported making location for Alberta Pacific Consolidated's No. 1 in the Red Coulee Field, which will likely start drilling in April.

Announcement has been made that, dependent on production, Commonwealth Petroleums, Ltd., of Calgary, has arranged to drill 16 tests this season on the Red Coulee structure. The company has secured 160 acres, NE, Section 3-1-16w4, from Alberta Pacific Consolidated Oils, Ltd., and it is planned to drill one test to each 10 acres. Location for No. 1 well has been made by Dr. T. B. Williams on the southwest corner of the block and contract has been let to J. W. Elliott of Kevin, Mont., the test to spud in within 30 days. The program contemplates completion of No. 1 well between 45 and 60 days after spudding, when two more tests will at once be started, with four to follow that pair, and eight to start when the four are finished. Failure to get commercial production will be the only limiting factor in the program. Contractor Elliott will handle the entire 16 tests. The acreage is close to that on which Vanalta's No. 1 was drilled.

Sunshine Oils, Ltd., has been incorporated with offices at Lethbridge, Alberta, to drill in Section 15-1-17w4, on the Red Coulee structure this spring.

Work is under way on the oil pipe line from the Red Coulee structure to the Maple Leaf Refining Co. plant at Coutts, Alberta. The Illinois Pipe Line Co. has commenced work on its pipe line from the Montana end of the structure to rail-head at Sweetgrass.

Border Operations

In the Spring Coulee district, Alberta Pacific Consolidated has completed fuel line and installed pumps to deliver fuel oil from Spring Coulee to its No. 1 location in Section 15-4-23w4. Cellar has been finished and derrick and camp buildings are being started. Test may spud in before the end of March. Nordon Corp. has an outfit testing for structure south of the Alberta Pacific holdings.

In addition to drilling on the Red Coulee structure and finishing its Milk River well, Commonwealth Petroleums, Ltd., will select location for a commercial test on the Blood Reserve structure some time in April, where 11 diamond drill structure tests have been put down. Dr. Eugene Coste will make the location.

In the Taber district it is reported that Cole-English Syndicate, whose No. 1 commercial test in LSD 3, Section 11-10-17w4, is shut down at 3,300 feet, is preparing to do some structure testing on the Rombough farm south of Taber.

An American syndicate is reported arranging for a test on 2,000 acres in the Del Bonita structure near Shanks Lake, about 24 miles west of Red Coulee and 6 miles north of the Montana boundary. Acreage, subleased from Multi-Structure Oils, Ltd., will be developed on one-eighth royalty basis. Drilling equipment has been ordered, and No. 1 test will spud in early this spring.

Carbon Oil Syndicate was organized recently by local men to develop a structure near Carbon, Alberta. A company will be incorporated and development will be commenced this spring. Gas seepages are known on the structure.

Wainwright Field

In east central Alberta, Peninsular Petroleums' No. 1, LSD 16, Section 30-45-6w4, has spudded in and is drilling below 50 feet. Weymarn Petroleums, Ltd., is getting ready to start its commercial test in Section 12-47-5w4. British-Wainwright Oils' No. 1, LSD 13, Section 20-46-6w4, is running tubing and will be put on production from 2,246 feet. Shareholders of Sasko-Wainwright Oil & Gas Co. held their annual meeting at Saskatoon recently when further development was favored, and the officers were unanimously re-elected, as follows: President, J. C. McLeod; vice president, C. H. Spencer; secretary-treasurer, G. A. W. Braithwaite; directors, A. Robertson, Perdue, Saskatchewan; J. G. Morton, Wainwright, Alberta; C. J. Nelson, Radisson, Saskatchewan. The company has No. 1 producing well in LSD 8, Section 19-45-6w4, and No. 2 location in the same LSD with derrick up.

Fabyan Petroleums' No. 3, LSD 16, Section 18-45-8w4, is expected to spud in with rotary outfit before the end of the month. This test offsets Fabyan's No. 2, formerly the "Imperial mystery well" drilled some years ago, and which, though not a commercial producer, blew considerable gas, oil emulsion and water at intervals.

On the Ribstone structure, Triton Oil Co. has arranged for drilling of its No. 1 well, offsetting Meridian Oils' No. 1 producer. A standard outfit already in the field will be used under supervision of Arnold C. Stuart, for a number of years with the Royal Dutch Shell interests.

On the Duvernay structure, east of Edmonton, preliminary work has been started for Alberta Pacific Consolidated's No. 1, in LSD 1, Section 4-56-12w4. A party, including Dr. T. B. Williams and F. Rhower of Alberta Pacific Consolidated with J. W. Elliott, drilling contractor of Kevin, recently flew from Calgary to location, when surface rights were leased and arrangements made for a start early this spring.

Ontario Drilling

In the Dawn Field, Lambton County, Ontario, Union Natural Gas Co.'s No. 45, Lot 19, Concession 1, Dawn Township, is drilling a test of the Dawn gas sand. In Mosa Township, Middlesex County, Southern Ontario Gas Co. has been doing some deep drilling. Its second Mosa test, near Newbury, is under way. A previous test, further north, was carried into the Trenton without securing any production.

In Dover Township, Kent County, two new Trenton limestone tests are under way. Olga Oil & Gas Co.'s No. 4, on the Stevens farm, was down around 1,200 feet and shut down owing to high water. Acme Gas & Oil Co.'s No. 3, just south of Ajax Oil & Gas Co.'s big gasser, is about the same depth, and is reported resuming.

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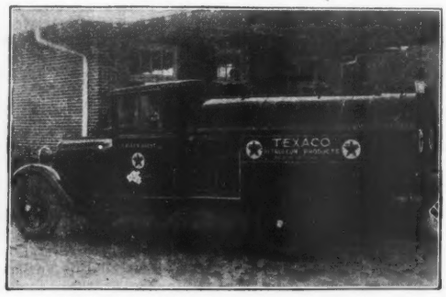

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Industrial Cleaning Materials and Methods

Acme Gas & Oil Co. is drilling a deep test. In the Bothwell Field, Kent County, Olga Oil & Gas Co.'s No. 2 Trenton test, close to the Provincial Highway, is reported fishing in the Trenton limestone at around 3,500 feet. In the same general area, shallow drilling operations are being continued by Acme Gas & Oil Co., which got a fair show on the John Vogler farm, north of the Thames River, and by Basic Resources, Ltd., which has a couple of small pumpers on the Moraviantown Indian Reserve. The oil was encountered in the Onondaga limestone horizon productive in the Bothwell Field.

A wildcat test for oil and gas drilled by a Toronto syndicate near Burlington, Ontario, is reported to have encountered a flow of calcium chloride brine, similar to the Michigan deposit owned by the Dow Chemical Co.

Potential Shallow Pool

It is reported that systematic development is to be undertaken this year in a new potential shallow pool near London, in Middlesex County, following geological investigations by an Alberta operator. Ontario producers have been approached to interest them in "community" tests. The new prospect is understood to be a shallow drilling proposition similar to the Petrolia and Bothwell Fields, with the potential oil horizon in the Onondaga limestone around 400 to 600 feet. Previous wildcatting in Middlesex County has resulted in a number of promising shows in this horizon. Some 15 years ago gas was encountered in a deeper horizon near Delaware, west of London, and at least one gas well there is still producing on a small scale. In 1917, F. J. Carman, after sytematic preliminary work, opened a fairly important shallow pool in Mosa Township, north of Glencoe; this pool produced from the Onondaga and for a couple of years had a larger yield than the Petrolia Field, and is still producing on a small scale. The shallow oil possibilities of Middlesex County, though negatived at a number of points, cannot be regarded as entirely proven or disproven. Isolated deep tests of the Trenton limestone and intervening formations have been unsuccessful, but have been too few and too widely scattered to yield definite conclusions.

LA.-ARK. FIELDS

(Continued from Page 63)

Oil City district, was a salt water hole at 2,950 feet.

Arkansas Fuel Oil Co. got the first show of anything any operator has had who has explored below the 1,500-foot Urania pay, when No. 5-F Urania, Section 24-10-1e, Tullos Townsite, hit a break in the lime and showed about 100,000 feet of dry gas at 4,740-60 feet. The test, the first deep one in LaSalle Parish, has furnished a lot of geological information but until this little puff of gas nothing else. S. G. Ray's No. 1 Urania, Section 19-20-2e, pumped 35 bbls. initial, total depth 1,568 feet.

Deep Tests in Monroe

Deep tests in the Monroe gas field were no more encouraging than on previous reports. Union Gas Products Co. made a drill stem test on No. 1 Hare, Section 22-19-5, at 2,565 feet, got nothing and is waiting orders. Probably the company will plug back as practically all other deep tests in the field have done. United Carbon Co.'s No. 2 Puckett, Section 15-19-5, tested salt water at 2,496 feet and is drilling. In Union Parish Bahan & Bahan are drilling No. 1 West, Section 33-23-3, at 2,430 feet after a dry drill stem test at 2,348 feet and Interstate Natural Gas Co.'s No. 26 Fee, Section 33-20-3, is drilling at 2,300 feet.

Not much better success attended deeper exploration in Richland. International Gas Products Co.'s No. 1-B Beck, Section 36-16-6, in the southwest corner of the field, tested dry at 2,539 feet and is awaiting orders after getting 100,000 feet of gas and a spray of salt water on test from 2,450-75 feet. Franklin Oil & Gas Co.'s No. 1 F. Smith, Section 24-16-6, gauged 52,000,000 feet of gas at 2,454 feet and M. L. Meredith's No. 1 Holdness, Section 15-16-6, made 41,000,000 feet at 720 pounds, total depth 2,446 feet. Bateman and others' No. 2 Wouple, Section 1-22-11, Sarepta district of Webster Parish started pumping 100 bbls. from 2,715 feet.

Quiet in Arkansas

Only three completions were reported from Arkansas. Arkansas-Louisiana Pipe Line Co.'s No. 1 Harms, Section 22-9-21, Pope County, is a dry hole and abandoned at 1,825 feet. Transcontinental Oil Co.'s No. 1 Novack, Section 36-2n-6, Prairie County, in the eastern Arkansas flat land rice belt, is abandoned as a dry hole at around 3,000 feet. Bredham and others' No. 1 Craig, Section 6-18-15, El Dorado district, Union County, went on the beam for 10 bbls. initial production, total depth 2,200 feet. Modisette Drilling Co. and Federal Petroleum Co.'s No. 1 Union Sawmill Co., Section 14-18-14, in the promising Urbana district, had a broken sand from 2,234-56 feet, made a drill stem test, has 750 feet of oil in the hole and is bailing. That is about the approximate level at which two or three short-lived wells were completed four years ago.

There was just one completion in the East Texas border county gas field, The Texas Company's No. 4 H. L. Brumble in the E. F. Mitcheson Survey of Panola County gauging 1,124,000 feet of gas, total depth 2,325 feet.

CALIFORNIA FIELDS

(Continued from Page 72)

11,846 bbls., divided into Barnsdall, 134 bbls. daily; A. B. Frame, 385 bbls.; General Petroleum, 1,910 bbls.; Petroleum Securities, 2,980 bbls.; Pacific Western, 1,550 bbls.; Shell, 1,733 bbls.; Signal, 484 bbls.; The Texas Company, 1,083 bbls.; Union, 1,374 bbls., and Vedder Brothers, 157 bbls. Round Mountain has a daily potential of 7,570 bbls. and an allowable of 3,785 bbls., divided into Honolulu Consolidated, 1,400 bbls.; Lindsey Oil, 200 bbls.; Petroleum Securities, 400 bbls.; Reynolds Oil Co., 112 bbls., and Shell Oil, 1,673 bbls.

To take care of its future production in the Mount Poso Field, the Petroleum Securities has started construction work on a new 1,000,000-bbl. reservoir located about 1 mile northwest of Bakersfield. More than 300 men, recruited from the ranks of the unemployed in Bakersfield and Kern County, are being used in construction work. According to Bert Pollock, construction engineer in charge, work will continue for several months and will aid in relieving the present unemployment situation in that territory. Men are being hired at the reservoir site on Section 35-28-27, in the southeast quarter of the southwest half of the southeast quarter of the section. This point is directly across the section intersection lines, on the other side of which is the Standard Oil Co.'s tank farm. More than $600,000 will be spent in construction of this new reservoir.

KANSAS FIELDS

(Continued from Page 60)

17-24-13, is spudding. Sinclair Oil & Gas Co.'s rig is up for No. 1 Beavers, SE cor. NE SW, Section 25-24-12. Derby Oil Co. staked location for No. 1 Beavers "B", NE cor. SE SW, Section 25-24-12. Phillips Petroleum Co. and others made location for No. 1 Miller, NE cor. NW, Section 2-25-10. Dixie Oil Co. and Amerada Petroleum Corp.'s No. 5 Ellis, NE cor. SW NW, Section 27-23-11, made 51 bbls. in sand 1,864-1,928 feet. Derby Oil Co.'s No. 1 Biggs, NE cor. SW, Section 36-24-10, is a dry hole at 1,950 feet.

McPherson County

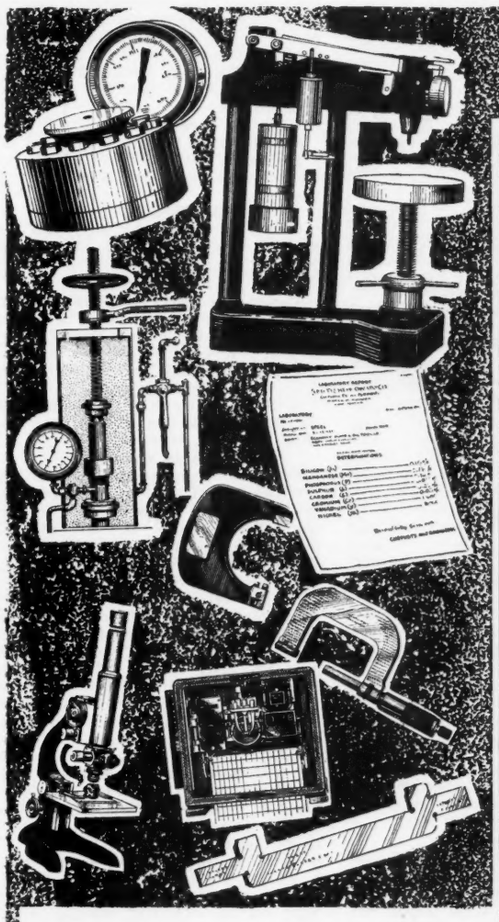
Derby Oil Co.'s No. 2 Stuckey, NE cor. NE SE, Section 9-21-3w, Voshell Pool, has been completed for 1,470 bbls. in Wilcox sand 3,311-28 feet. The Texas Company's No. 1 Stuckey, NW cor. SW SW, Section 10-21-3w, made 1,332 bbls. in Wilcox sand 3,397-3,401 feet.

Osborne County

Phillips Petroleum Co.'s No. 1 Grieve, NW cor. SE NE, Section 6-7-12w, is dry and abandoned at 4,389 feet.

Russell County

Empire Oil & Refining Co. is building



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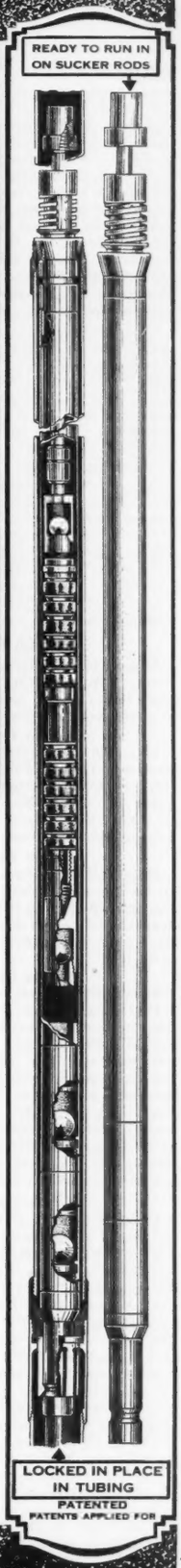

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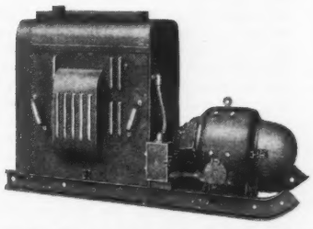

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OGJ 3-13 Gray

the rig for No. 1 Dillner, NW cor. Section 36-13-15w. Jamot Brown and others made location for No. 1 Baumrucker, NE cor. NW SW, Section 8-14-15w. Gilbreath and others' No. 1 Mansfield, SE cor. SW, Section 16-12-13w, is dry and abandoned at 3,469 feet. Jamot Brown and others' No. 1 Baumrucker, NE cor., Section 18-14-15w, has been abandoned at 3,439 feet.

Sedgwick County

Wentz Oil Corp. has the rig up for No. 7 Bright, NW cor. SE NW, Section 1-26-1w, Valley Center Pool. Dixie Oil Co. and Amerada Petroleum Corp.'s No. 1 Foulston, SW cor. NW, Section 11-26-2, has been abandoned at 3,336 feet. Shell Petroleum Corp.'s No. 1 Southwestern College, SW cor. SE SW, Section 2-27-1w, made 304 bbls. in Viola lime 3,391-94 feet.

Smith County

Phillips Petroleum Co.'s No. 1 Clydesdale, SE cor. NW, Section 23-5-14w, is dry and abandoned at 4,184 feet.

Sumner County

Kingwood Oil Co.'s No. 1 Stayton, C NE, Section 18-31-2w, is dry and abandoned at 4,361 feet.

Trego County

Phillips Petroleum Co.'s No. 1 Spitz, SE cor., Section 24-12-25w, is dry and abandoned at 4,670 feet.

OKLAHOMA FIELDS

(Continued from Page 58)

The average daily production for the area was 57,094 bbls. for the above seven days.

Logan County Developments

Prairie Oil & Gas Co.'s No. 1 Kendrick, SW cor. NW SE Section 21-18-4w, Logan County, in the Cresent-Lovell Pool, has discovered a new producing horizon and extended the producing area in the pool. The well made 178 bbls. on the gauge ending at 7 a.m. March 7 from a pay at 4,987-93 feet. The test missed production in sand at 3,900 feet, which is found in other wells in the district and was being drilled to the Wilcox sand when the new pay horizon was encountered.

A location was made by S. Hall and others for No. 1 Norris, SW cor. Section 22-18-4w, Logan County. The test is expected to be drilled to the Wilcox sand.

Texas Pacific Coal & Oil Co.'s No. 1 Ray, NW cor. NE NW Section 27-18-4w, one of the early wells in the area, cleaning out at 4,100 feet, where it was making gas, has been showing oil. The well was plugged back after finding water in the Wilcox sand.

Healdton Oil & Gas Co.'s No. 1 Gragg, SW cor. Section 29-18-4w, was cleaning out at a total depth of 6,768 feet, where it was making 45 bbls. a day. The well is fishing for a bailer.

Continental Oil Co. and Barnsdall Oil Corp.'s No. 1 Brown, N half N half SW Section 10-20-4w, Garfield County, was drilling at 5,440 feet in lime. The test had 20,000,000 feet of gas at 5,090-5,100 feet a few weeks ago.

Northwestern Wildcats

The other wildcat tests in the northwestern part of the State were drilling as follows: Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Section 14-26-24w, Harper County, is shut down with the 6-inch casing cemented at a total depth of 7,561 feet. Same company's No. 1 Steward, SE cor. SW Section 33-27-15w, Woods County, was drilling at 6,787 feet. Sinclair Oil & Gas Co. and others' No. 1 Crowell, SW cor. NW NE Section 23-28-16w, Woods County, was drilling at 4,925 feet. Prairie Oil & Gas Co.'s No. 1 Wilber, NE cor. NW Section 23-23-17w, Woodward County, was drilling at 6,202 feet. Bu-Vi-Bar Petroleum Corp. and others' No. 1 Thompson, SE cor. SW Section 10-25-15w, Woods County, was fishing at 6,104 feet. Rig is up for Empire Oil & Refining Co.'s No. 1 Bruce, C NE SW Section 12-25-20w, Harper County.

Good Well in Cement Pool

A new producer was found in the Cement Pool in Caddo County. Magnolia Petroleum Corp.'s No. 6 Caddo-Rowe, SE cor. NE SW NE Section 36-6-10w, Caddo County, flowed 850 bbls. the first 24 hours. The well had been making around 150 bbls. a day before being deepened to 3,327 feet. The old depth was 3,300 feet. Same company's No. 3 Niles, SE cor. NW Section 36-6-10w, was coring at 4,100 feet. No. 7 Niles, NE cor. SE NW Section 36-6-10w, was cementing casing at 2,935 feet.

In Marshall County, Magnolia Petroleum Co. has announced a new location for No. 1 West Rutland Bank, SW cor. SE SE NW Section 30-5s-6, a quarter mile southeast of production, in the Madill district. Carter Oil Co.'s No. 8 Sullivan, SE cor. NW NW NW Section 30-5s-6, Marshall County, made 12 bbls. of oil in 16 hours from sand at 593-99 feet. Roy Poland and others' No. 1 Crouch, SW cor. NW SE Section 11-5s-5, Marshall County, north of production, was drilling at 890 feet.

In Pontotoc County, Benedum & Trees' No. 1 Homeday, SE cor. SW SW Section 27-5-5, was a failure in the Wilcox sand at 3,002-10 feet, where a hole full of water was encountered. LaSalle and others' No. 1 Mallory, NW cor. SE SE Section 30-5-5, in the Beebe area, was drilling in Woodford shale at 2,105 feet.

Shell Petroleum Corp. and Sheldon Oil Co.'s No. 1 Hopping, NE cor. SE Section 21-12-11, Okfuskee County, had Simpson sand at 3,446-63 feet, and filled up 1,600 feet, with 44 gravity oil. Sunray Oil Co. and Sheldon Oil Co. drilled a well to the Quinn-Lyons sand at 2,700 feet, which opened this pool. Since that time Independent Oil & Gas Co. has two wells producing in the Simpson sand and Sunray Oil Co. has one well.

W. B. Pine's No. 1 Rossiter, NE cor. SW SW Section 17-12-13, Okmulgee County, is the first Simpson sand producer in the Schulter area. The sand was found at 2,969 feet, where the oil flowed by heads 90 bbls. the first 22 hours. The new well will be drilled deeper and a production test made.

Gas Well Afire

Mid-Western Oil & Gas Co.'s No. 2 Carney, NE cor. NW NE Section 5-7-18, Pittsburg County, in the Quinton gas field, was burning and the crew were trying to close the gate valve in order to stop the flow of gas which estimated to be 22,000,000 feet, and thus extinguish the fire. The well is producing from sand at 1,823-97 feet.

The Konawa Pool was extended by Hilton Phillips and others' No. 1 Hyde, SE cor. NE Section 20-6-6, in the southern part of Seminole County. The well had sand at 3,096-3,118 feet, and made 1,050 bbls. the first 17 hours and the next day it made 335 bbls. in six and one-half hours. The new well is shut in for the proration period. The well extends the producing area over a mile south.

Another interesting test southwest of the Konawa Pool is Anderson & Kerr's No. 1 in Section 19-6-6, which has reached a total depth of 2,840 feet. The hole will be surveyed with an acid test.

New Location in Konawa

New locations are being announced in the Konawa Pool almost every day. During the week the following locations were made: Gypsy Oil Co.'s No. 1 Hempey, SW cor. SE NW Section 21-6-6; Shell Petroleum Corp.'s No. 1, NW cor. SE SE Section 20-6-6; E. L. Harris and others' No. 1, NW cor. SW Section 21-6-6; Burke-Greis Oil Co.'s No. 1, NW cor. SW SW Section 21-6-8; Reynolds and others' No. 1 in the NW cor. SE NE Section 16-6-6; Gypsy Oil Co.'s No. 1 in the SW cor. SE NE Section 21-6-6; Mid-Continent Petroleum Corp.'s No. 1 in the NW cor. NE SW Section 21-6-6; Prairie Oil & Gas Co.'s No. 1 in the SW cor. NW NW Section 21-6-6; No. 3 in the SE cor. SW NW Section 21-6-6; Davies and Hilton Phillips' No. 1 in the NE cor. Section 29-6-6.

McCulloch Oil Co.'s No. 1 Tully, SW cor. NW Section 16-6-6, made 605 bbls. of oil from a total depth of 2,934 feet. Twin State Oil Co.'s No. 1 Charlie, NE cor. SE SW Section 8-6-6, was drilling in Sylvan shale at 3,790 feet.

Greater Seminole Production

Production from the important pools in the Greater Seminole area declined over 29,000 bbls. for the seven days ending March 5. The Seminole area averaged 190,819 bbls. from 1,835 wells. The daily average gauge for the different pools in the area were as follows:

Pool—	Wells	Bbls.
Little River	360	35,082
East Little River	58	15,969
Carr City	59	9,244
Maud	136	5,244
Mission	110	10,277
Bowlegs	293	18,611
Earlsboro	299	33,341
East Earlsboro	131	31,560
Seminole	271	19,223
East Seminole	31	3,362
Searight	87	8,906
Allen	256	20,381
Asher	26	2,490
Konawa	16	8,591
St. Louis	472	42,849
Sasakwa	46	9,318
Total	2,651	274,448

Pipe Line Shipments

The daily average pipe line and tank car shipments for the seven days ending March 5 were 207,079, a decline of about 5,000 bbls. from the previous week. Shipments by companies for the week were as follows:

Company—	Bbls.
Barnsdall	2,355
Champlin	3,766
Continental	1,598
Consolidated	724
Cosden	7,451
Empire	4,094
Gypsy	29,274
Magnolia	11,482
Oklahoma	24,001
Prairie	30,059
Producers & Refiners	1,822
Pure	2,413
Shaffer	4,513
Shell	10,971
Sinclair	39,550
Texas	13,031
Tidal	12,307
White Oak	707
Total	200,118
Tank cars	6,620
Grand total	206,738

Beckham County

Sayre Oil & Refining Co.'s No. 1 Porch, SW cor. NW SE, Section 24-9-23w, Sayre Field, was deepened 1 foot to 2,697 feet and flowed 250 bbls.

Caddo County

Magnolia Petroleum Co.'s No. 6 Caddo-Rowe, NE cor. SW NE, Section 36-6-10w, is drilling deeper at 3,285 feet. Noble & Olson's No. 3 Ed Rowe, SW cor. NW SE NE, Section 36-6-10w, is flowing 640 bbls. from sand 3,400-18 feet.

Carter County

Magnolia Petroleum Co. has the rig up for No. 6 Gill, NW cor. NE SE, Section 23-1s-3w. Ven Mex Oil Co.'s No. 1 Spears, SW cor. NW SE, Section 29-1s-3w, has been completed for 103 bbls. at 4,047 feet.

Cotton County

Shasta Oil Co. has the rig up for No. 3 Patterson, NE cor. NW, Section 1-2s-10w. Baldwin & Sultan and Wirt Franklin Petroleum Corp.'s No. 1 School, NW cor. SW SW SW, Section 36-1s-10w, is pumping 8 bbls. from sand 2,180-90 feet. Shasta Oil Co.'s No. 1 Little Field, SE cor. NW, Section 31-1s-9w, made a 25-bbl. pumper in sand 2,222-38 feet. American Refining Co.'s No. 1 Miller, SE cor. SW, Section 9-5s-12w, has been abandoned at 2,216 feet.

Creek County

Phillips Petroleum Co. and Gled Oil Co. moved a machine in for No. 5 Koch, NW cor. SE NE, Section 20-19-9. Shaffer Oil & Refining Co. has the rig on the ground for No. 1 Hay, NW cor. SW SW, Section 10-17-10. Phillips Petroleum Co. and Gled Oil Co.'s No. 4 Koch, SW cor. NE NE, Section 20-19-9, has been completed for 175 bbls. in sand 2,213-45 feet. Shaffer Oil & Refining Co. and others' No. 1-A McCauley, SE cor. NE SE, Section 9-17-10, made 70 bbls. from Wilcox sand 2,894-2,915 feet. Logan & Kistler and others' No. 2 Harjo, SW cor. NW NW, Section 27-14-10, is dry and abandoned at 3,329 feet.

Garvin County

Magnolia Petroleum Co.'s No. 1 Rose, SW cor. SE, Section 10-1-8w, is an old well drilling deeper at 1,700 feet.

Grady County

Magnolia Petroleum Co.'s No. 5 Heatley, NW cor. SW NE, Section 2-4-8w, has been completed for 29,000,000 feet of gas in sand at 2,401 feet.

Hughes County

McGee Brothers made location for No. 1 Penn, NW cor. SW SE, Section 10-9-10. Iglehart and others' No. 1 Brooks "C," C SW SW, Section 28-9-10, is a rig being built. The Prairie Oil & Gas Co. is erecting the rig for No. 1 Hensley, NE cor. NW NE, Section 32-8-9. Mid-Continent Petroleum Corp.'s No. 1 J. Buck, SW cor. NE NW, Section 28-9-10, has been completed for 8,500,000 feet of gas at 3,076 feet.

Grant County

Sinclair Oil & Gas Co. and others' No. 1 Dickerson, SW cor. NW NE, Section 36-28-3w, has been abandoned at 4,677 feet.

Jefferson County

Carter Oil Co.'s No. 2 Seay, NW cor. SE SW, Section 34-6s-5w, is swabbing 275 bbls. from sand 1,525-58 feet.

Kiowa County

Parker and others' No. 4 Fuqua, SW cor. NE, Section 18-6-16w, is drilling at 50 feet. Engle and others' No. 1 Kelsey, NW cor. SW, Section 20-7-17w, has been abandoned at 1,610 feet.

Latimer County

J. S. Cochran's No. 1 Cushing, NW cor. SE SE, Section 36-7-32, has been abandoned at 2,100 feet.

Logan County

Shell Petroleum Corp.'s No. 3 Shaffer, NW cor. SE NE, Section 19-19-4w, Roxaan Pool is dry and abandoned at 4,177 feet. No. 4 Rouse "B," SW cor. NE NE, Section 19-19-4w, has been abandoned at 4,665 feet. No. 2 Rouse "A," NW cor. SW, Section 20-19-4w, made 2,000,000 feet of gas in sand 4,765-85 feet after plugging back from 4,954 feet.

Marshall County

Bilbo Oil Trust Co.'s No. 3 Null, SW cor. NE NW, Section 24-5s-5, Madill Pool is drilling at 75 feet. Magnolia Petroleum Co. moved a machine in for No. 1 West Rutland Trust Co., SW cor. SE SE NW, Section 30-5s-6. W. F. Dennis' No. 1 McComas, NW cor. SW NE SW, Section 13-5s-5, has been abandoned at 805 feet. Bilbo Oil Trust Co.'s No. 5-B Talefero, NW cor. NE SE SE, Section 14-5s-5, made a 60-bbl. well in sands 500-03 feet and 508-29 feet. No. 2 Null, SW cor. NE NW, Section 24-5s-5, has been completed for 200 bbls. at 604 feet. Flemming & Kimbrell's No. 2 Null, SW cor. NE NW, Section 24-5s-5, made 125 bbls. at 600 feet. F. W. Merrick's No. 3 Null, NE cor. NW NW NW, Section 24-5s-5, has been completed for 3 bbls. at 612 feet. No. 4 Null, CNL NW SE NW, Section 24-5s-5, is making 45 bbls. at 614 feet. Carter Oil Co.'s No. 3 Davidson, SE cor. NW NW NW, Section 30-5s-6, has been completed for 25 bbls. at 620 feet.

Muskogee County

Bryan Petroleum Co.'s No. 4 Barnett, SE cor. NE, Section 8-15-15, is drilling deeper at 1,645 feet. D. L. T. Co.'s No. 1 Mackey, NE cor. SW SW, Section 9-15-18, is preparing to deepen from 800 feet. Bryan Petroleum Co.'s N. 1 Rolland, NW cor. SW, Section 19-16-16, is dry and abandoned at 1,868 feet. H. L. Jolly's No. 2 T. Carlina, NW cor. SE NW SW, Section 9-15-18, has been completed for 75 bbls. in asnd 958-68 feet. Mid-Western Oil & Gas Co.'s No. 3 M. Parker, C NE SW, Section 31-12-19, has been completed for 1,000,000 feet of gas in sand 632-55 feet.

Okfuskee County

Continental Oil Co.'s No. 1 Simmer, NE cor. SW NW, Section 32-12-10, is rigging up to deepen from 2,949 feet. Mid-Continent Petroleum Corp.'s No. 1 Phillips, NE cor. SW, Section 32-12-10, made 5,500,000 feet of gas in sand 3,065-3,106 feet. E. L. Robinson's No. 7 Berryhill, C NE SW, Section 35-11-9, made 15 bbls. in sand 1,465-80 feet. Summitt Drilling Co.'s No. 1-A L. Pigeon, SE cor. NW SW, Section 23-11-11, has been completed for 15 bbls. in sand 2,638-91 feet. Sunray Oil Co.'s No. 2-A W. Dindy, NE cor. SE NW, Section 31-11-11, had sand at 3,602-15 feet and made 50 bbls. Champlin Oil & Refining Co.'s No. 1 Fish, NE cor. NW SW, Section 17-11-12, is a dry hole at 2,940 feet.

Okmulgee County

J. E. Wallace has a machine on the location for No. 12 V. Colbert, SE cor. NW NE, Section 14-14-14. C. D. Burns' No. 16 I. Anderson, NW cor. NE, Section 35-14-14, is drilling at 500 feet. J. H. Rebold's No. 3 Brooks, CSL SW NE, Section 6-15-13, is dry and aban-

doned at 2,935 feet. J. E. Wallace's No. 11 V. Colbert CSL NW NE, Section 14-14-14, made 20 bbls. in sand 1,100-16 feet. J. L. Selby's No. 3-A P. Flint, NE cor. SE NW, Section 26-14-14, is dry and abandoned at 1,025 feet. Eagle Picher Lead Co.'s No. 1-A Morton, SW cor., Section 28-13-12, is a dry hole at 3,174 feet. Jake Rutz Oil Co.'s No. 9 Hill, SW cor. NE SW SW, Section 25-13-14, made a 12-bbl. well in sand 1,809-69 feet.

Noble County

Peerless Oil Co. and others' No. 1 Wentz, NW cor. SW, Section 22-22-1, made 100 bbls. at 3,305 feet. Magnolia Petroleum Co.'s No. 1-A T. Young, NE cor. NW NW, Section 22-21-2w, has been completed for 1,000 bbls. in sand 5,100-04 feet.

Oklahoma County

Standish, McClunty & Wade made location for No. 1 Needham, SE cor. SW, Section 27-11-3w. Indian Territory Illuminating Oil Co.'s No. 2 Thomas-Fuzzell, SE cor., Section 13-11-3w, Oklahoma City Pool, has been completed for 17,260 bbls. at 6,484 feet in Arbuckle lime, topped at 6,040 feet. Cromwell-Franklin's No. 5 Trosper Park, NE cor. NW NE, Section 13-11-3w, made 1,272 bbls. in Arbuckle lime 6,152-6,452 feet. Indian Territory Illuminating Oil Co.'s No. 1 Barker-Drake, SW cor. SE SE, Section 14-11-3w, has been completed for 5,178 bbls. in sand 6,398-6,426 feet. Coline Oil Co.'s No. 6 Olds, NE cor. NW NW, Section 24-11-3w, has been completed for 2,234 bbls. in sand 6,432-65 feet. Indian Territory Illuminating Oil Co.'s No. 1 Hiddleston, SW cor. NE, Section 19-11-2w, made 2,270 bbls. in Arbuckle lime 6,060-6,519 feet. The Prairie Oil & Gas Co. and T. B. Slick's No. 6 Hiddleston, SE cor. SW SE, Section 19-11-2w, was completed for 9,045 bbls. in Arbuckle lime 6,055-6,485 feet. Indian Territory Illuminating Oil Co.'s No. 4 Emmerson, SE cor. SW, Section 30-11-2w, flowed 7,090 bbls. from sand 6,362-94 feet. Sinclair Oil & Gas Co.'s No. 5 Stamper, NE cor. SE NW, Section 30-11-2w, has been completed for 576 bbls. in Arbuckle lime 6,215-50 feet. Indian Territory Illuminating Oil Co.'s No. 2 Jones, NE cor. NW, Section 31-11-2w, made 8,410 bbls. in sand 6,380-6,413 feet.

Osage County

Winona Oil Co.'s No. 11, SW cor. SE NE, Section 20-29-9, is rigging up. Indian Territory Illuminating Oil Co. made location for No. 426, NW cor. SE SW, Section 30-25-12. Peters Petroleum Corp. and Producers & Refiners Corp.'s No. 1, SW cor. NE, Section 5-22-8, is a rig under construction. A. G. Oliphant's No. 1, SW cor. SE NW, Section 12-26-8, is dry and abandoned at 2,250 feet.

Payne County

Skelly Oil Co. and Shaffer Oil & Refining Co. moved the rig in for No. 1-B School land, SW cor., Section 16-19-5. Location has been made for No. 1 Massie, SE cor., Section 17-19-5. Twin State Oil Co. made location for No. 1 Dawes, NE cor. NW NE, Section 20-19-5. Shaffer Oil & Refining Co. staked location for No. 1-A Dawes, NW cor., Section 21-19-5. Mulberry Oil Co.'s No. 4 Ballard, SE cor. SW SW, Section 32-19-4, is rigging up to deepen from 4,198 feet. Shaffer Oil & Refining Co. has the rig up for No. 3 Echo Hawk Heirs, NE cor. SW NE, Section 4-18-5. No. 4 Echo Hawk, NW cor. NE NE, Section 9-18-5, is a rig on the ground.

Pawnee County

Martin and others' No. 4 Cotton, CNL NE SW, Section 6-20-8, is rigging up to deepen from 2,491 feet. Sample and others' No. 1 Sample, SW cor. NW NW, Section 36-20-8, is dry and abandoned at 2,015 feet. Johnson Oil & Refining Co.'s No. 3 Byles, CNL SE NE, Section 27-20-9, has been abandoned at 2,237 feet.

Pittsburg County

Central States Light & Power Co.'s No. 1 Carney, SE cor. NE, Section 9-7-18, has been completed for 25,000,000 feet of gas in sand 1,739-82 feet.

Pontotoc County

Benedum & Trees Oil Co.'s No. 1 Brydria, CNL NW NW, Section 34-5-5, is drilling at 215 feet.

Pottawatomie County

Stogner and others' No. 1 Earlsboro Townsite, block 8, lot 2, NW cor. SW NW, Section 8-9-5, is a cellar. J. H. Gwin and others' No. 2 Coley, SW cor. SE SE, Section 24-7-4, St. Louis Pool is a cellar. Twin State Oil Co.'s No. 2 Magruder, SE cor. NE NE, Section 7-9-5, East Earlsboro Pool, has been completed for 300 bbls. in Wilcox sand 4,296 feet. Keister & Manning's No. 1 Rowlett, SW cor. SE NE, Section 30-8-4, made 310 bbls. in Hunton lime 4,465-81 feet. Magnolia Petroleum Co.'s No. 4 Banta, SE cor. NE SE, Section 14-7-4, has been completed for 50 bbls. at 4,005 feet, after plugging back from 4,260 feet in Simpson sand. Amerada Petroleum Corp.'s No. 2 Richardson, SW cor. SE SW, Section 16-7-4, drilled to 4,214 feet in Simpson sand, plugged back to 4,152 feet and made 71 bbls.

Seminole County

Continental Oil Co. has the cellar dug for No. 3 Maguire, NW cor. SE SE, Section 24-9-5, East Earlsboro Pool. Magnolia Petroleum Co. made location for No. 4 Moore, SW cor. NE SE, Section 24-9-5. Sinclair Oil & Gas Co.'s No. 2 Miller, SE cor. NW SE, Section 24-9-5, is a cellar. Gypsy Oil Co. made location for No. 1 Miller, NE cor. SW SE, Section 24-9-5. Continental Oil Co. staked location for No. 1 Normand, SE cor. NW NW, Section 17-6-6. Sinclair Oil & Gas Co. has dug the cellar for No. 2 Johnson, NW cor. SE NW, Section 17-6-6, Konawa Pool. The cellar has been dug for No. 2 Wren, SW cor. NE NE, Section 17-6-6. The Texas Company's No. 3 Atkinson, NW cor. SW NE, Section 17-6-6, is a cellar. No. 4 Atkinson, SE cor. NW NE, Section 17-6-6, is also a cellar. The Prairie Oil & Gas Co. and T. B. Slick's No. 1 Amey, SW cor. NW, Section 21-6-6, is rigging up. Location has been made for No. 1 Burgess, NE cor. SW SE, Section 7-6-6. No. 1 Lemons, NE cor. NE SE, Section 7-6-6, is also a location. The Prairie Oil & Gas Co.'s No. 1 Ground, NE cor. NW NE, Section 23-9-5, is a rig under construction.

Carter Oil Co.'s No. 4 Harber, SE cor. SW SE, Section 7-9-6, East Earlsboro Pool, is dry and abandoned at 4,360 feet. Burke-Greis Oil Corp. and others' No. 1 Powell, NW cor. NE SW, Section 17-9-6, has been abandoned at 4,228 feet in Wilcox sand. The Texas Company's No. 7 Magruder, SW cor. SE NW, Section 19-9-6, flowed 1,505 bbls. from Wilcox sand 4,124-48 feet. Sinclair Oil & Gas Co.'s No. 4 P. Fixico, SW cor. NW, Section 23-9-6, is a dry hole at 3,652 feet. Gypsy Oil Co.'s No. 3 Walker, SE cor. SW SE, Section 5-7-7, East Little River Pool, plugged back to 3,350 and is making 62,500,000 feet of gas. Mid-Continent Petroleum Corp.'s No. 3 Yarhola, NE cor. SW NE, Section 8-7-7, after drilling to 3,268 feet, has plugged back to 3,263 feet and made 230 bbls. Champlin Oil & Refining Co. and Shell Petroleum Corp.'s No. 2 Sachemeche, SW cor., Section 9-6-6, Konawa Pool, made 2,341 bbls. from Cromwell sand 2,875-2,915 feet. Gypsy Oil Co.'s No. 1 Wren, NW cor. NE NE, Section 17-6-6, made 1,190 bbls. from Cromwell sand 2,893-2,923 feet. Blackwell Oil & Gas Co.'s No. 1 Hall, SW cor. SE SE, Section 6-6-8, is dry and abandoned at 4,364 feet in Wilcox sand topped at 4,360 feet.

Stephens County

Magnolia Petroleum Co.'s No. 9 Peck, SW cor. SE SE NE, Section 13-2s-8w, has been completed for 3 bbls. in sand 1,479-82 feet.

Tulsa County

J. L. Donahoe and others' No. 1 Donahoe, SE cor., Section 12-19-13, is spudding.

Wagoner County

I. V. Horner has a machine on the location for No. 1 Murrell, SW cor. SE, Section 27-18-17. Utopia Oil Co.'s No. 1-A Jones, NW cor. SE SE, Section 35-18-18, is spudding. I. V. Horner's No. 1 Nichols, NW cor. NE NW, Section 35-18-17, is dry and abandoned at 920 feet. J. A. Scherer's No. 1 Posey, NW cor. SW NE, Section 5-17-18, has been abandoned at 1,270 feet.

Woodward County

Sharon Oil Co.'s No. 1 Elmore, SW cor., Section 25-21-21w, is dry and abandoned at 3,025 feet.

DISCOVERY OF OIL OPENS NEW CHAPTER

(Continued from Page 68)

might be encountered in the upper horizons. This well was spotted approximately on the top of the structure and drilling began with an unusually fine outfit. It began to attract attention in December when at 2,872 feet it was in the third bench of the Sundance sand. The walls of the hole had been mudded with the rotary drill, but the pressure finally caused the well to break loose. It flowed 2,117 bbls. in 24 hours, with 1,600 pounds pressure, the hole making between 10,000,000 and 15,000,000 feet of gas. Some time was required to bring the well under control, mud off the production and get it in shape for resumption of drilling. The bit found the Embar horizon, but it did not amount to much, had no sand and was hard and tight. Then, at 3,780 feet it topped the Tensleep. The 8¼-inch was cemented and drilling in began. The pay was found at 3,790 feet. It was drilled to 3,795 feet and the next day the oil had risen 1,100 feet in the hole. It swabbed 472 bbls. in 12 hours. The first oil tested 27.7 A.P.I., but next day it tested 26 gravity. Other samples have tested a little higher. The Tensleep is estimated to be around 200 feet thick. The hole was then cored and drilled to 3,801 feet and stopped for a test. It flowed 621 bbls. in 24 hours. It was then deepened to 3,805 feet where it is again being tested. So far no water has shown up. The oil, however, had a sulphur content of 2.3 per cent. No analysis of gasoline content has been given out, but Oregon Basin crude from the same horizon is being refined successfully by The Texas Company at Cody, the gasoline produced measuring fully up to the standard grades marketed by that company.

Below the Tensleep, the horizons remaining to be tested include the Amsden, expected in this well at about 4,075 feet, the Madison, at 4,260 feet, and the Deadwood below the Madison. The last named is not included in some of the geological reports on Salt Creek, but in a well drilled last year on the Little Sheep Mountain structure in Big Horn County, Section 35-56-95, by the Prairie Oil & Gas Co., the formation was found in place. As far as known, only two wells have been drilled to the Deadwood on favorable structures in central or northern Wyoming. The Madison lime is productive in Soap Creek and Kevin-Sunburst in northern Montana, and has been drilled to a limited extent only in Wyoming. Last year the Madison was tested by the Midwest on Section 25-58-98, on the Frannie Dome in Park County and at 3,013 feet it flowed 2,424 bbls. in 24 hours. This formation is estimated to be about 600 feet thick. The underlying Deadwood is estimated to be about 200 feet thick in Salt Creek. Since all of these horizons probably will be tested within 5,500 feet, the drilling depth is not prohibitive.

May Cover 2,000 Acres

It is impossible at this time to estimate the productive area of the Tensleep horizon. However, the well on Section 25 which found water in that formation is 400 feet lower structurally than the discovery well. The best estimate is that the Tensleep will cover 2,000 acres, most of which is embraced in the holdings of the Mountain Producers Corp. and the Salt Creek Producers Association. The Midwest Refining Co. operates these properties under contract. The more recent discoveries preceding the find in the Tensleep showed that about 1,200 acres was productive in the second Sundance sand and 500 to 600 acres in the third Sundance. The sands above the Sundance covered still larger areas. The showing made in the Tensleep was in a measure a surprise as the Madison lime was considered as having greater possibilities for large production. Drilling through the Tensleep will go ahead cautiously with frequent stops to make tests of production.

A check of wells in Salt Creek as of July 1, 1929, showed 81 shale wells, 317 First Wall Creek, 1,601 Second Wall Creek, 14 Third Wall Creek, 14 Lakota shale wells, 82 Lakota sand wells, and 16 Sundance sand wells, a total of 2,125 wells.

ISAAC M. TAYLOR DIES

BOWLING GREEN, Ohio, Mar. 8.—Isaac M. Taylor, 85 years old, died at his home here Tuesday, March 4, after a three weeks illness of pneumonia.

Mr. Taylor was a 15-year-old boy living in New York State when news of the discovery of oil in the Drake well near Titusville, Pa., came to his home village. The lad immediately set out for Titusville and went to work in the field. He remained in the oil business throughout his active life. Mr. Taylor operated in the Western Pennsylvania fields and later when oil was discovered in the Lima, Ohio, district went to that city and was a partner in the ownership of the second well drilled in that area, which was of the gusher type. Coming to Bowling Green in 1887 he drilled the first well on the Sand Ridge Road. It was a salt water well that looked like a failure but by patiently pumping the salt water was exhausted and the well proved a large producer.

Mr. Taylor remained in the oil business until his retirement from active business. He was married in 1880 to Mary Adelia Hoffman of St. Petersburg, Pa., and four daughters and Mrs. Hoffman survive.

The funeral was held here Thursday, March 6.

PUMP USES NEW PRINCIPLE

The Continental pump, made by the Continental Equipment Co., Los Angeles, Calif., operates without the use of plungers or sucker rods. It utilizes the atomizing principle and is operated by air or gas pressure. The pressure actuates a simple turbine motor within the pump and also atomizes the oil, relieving the hydrostatic load so that the oil is lifted from its level by the atomizing method. For several months the pump has been under test in California fields. Along with the Continental slush pump piston, a new development in piston design, the pump will be exhibited at the oil equipment show in Los Angeles, Calif., next week.

JOHN CUMMINGS, SR., DEAD

OIL CITY, Pa., Mar. 7.—John Cummings, Sr., age 90 years, died at his home here on March 2. Mr. Cummings came to Oil City in 1865. He was a machinist by trade. He opened a machine shop and in a few years became widely known throughout the Pennsylvania oil country as a maker of oil well tools and as a producer of oil. Six sons survive.

DOMESTIC EXPORTS OF PETROLEUM AND REFINED PRODUCTS

	Month of January		Mos. ending December	
Petroleum—	1929	1930	1928	1929
Crude ..... Bbls.	1,971,644	1,807,927	10,289,015	14,878,377
Crude ..... $	2,638,540	2,486,189	14,875,235	22,353,171
Total refined petroleum ... Bbls.	10,860,110	11,160,985	61,583,601	65,402,953
Total refined petroleum ..... $	42,217,337	41,978,122	241,096,710	250,621,724
Gasoline, naphtha and other light products ..... Bbls.	4,506,391	5,296,359	26,501,191	31,702,944
..... $	21,253,965	23,131,914	127,093,352	138,880,695
Oils, illuminating ..... Bbls.	1,895,795	1,937,537	10,606,357	9,631,374
Oils, illuminating ..... $	7,655,137	7,526,233	47,087,634	40,238,292
Gas and fuel ..... Bbls.	3,342,850	3,020,569	19,288,620	18,793,382
Gas and fuel ..... $	3,687,729	2,978,887	20,953,624	19,416,214
Lubricating ..... Bbls.	1,101,515	892,182	5,094,725	5,193,513
Lubricating ..... $	9,431,068	8,151,488	44,904,280	50,895,818
Other refined petroleum ... Bbls.	13,559	14,338	92,708	81,740
Other refined petroleum ..... $	189,438	189,600	1,057,820	1,190,705
Paraffin wax ..... Lbs.	29,000,918	32,325,538	171,894,398	176,715,129
Paraffin wax ..... $	1,528,931	1,291,433	8,261,740	7,070,602

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FOR SALE—Leases and Royalties, Lincoln, McClain and Grady Counties, Okla. Bandara, Edwards, Kinney and Val Verde Counties, Texas. Bloch, 3-8114. P. O. Box 531. Tulsa, Okla.

FOR SALE: Oil leases and Perpetual Warranty Deeded oil royalty located in the active areas of New Mexico's great Potential oil fields, Lea County. Huge profits are being made. Why not get in now? Prices are yet low. Write for information and late oil development map free. Monarch Inv. Co., Roswell, N. M.

FOR SALE quick gamble, 80-acre lease direct offset to Wilcox sand test, Twenty-five dollars per acre. Well now drilling below 1,800 feet on proven high. P. O. Box 845, Muskogee, Okla.

COOKE COUNTY, TEXAS, LEASES. Five-year leases, 1 to 3 miles from well now drilling. Good geology. $2 to $6 per acre. W. R. Andrews, Box 7, Gainesville, Tex.

TEXAS ROYALTIES—$2 base and up. Leases 20 cents and up. Cheap lands $2.50 and up. Send for interesting bargain list. General Inv. Co., Box 774, San Antonio, Tex.

LEASE FOR WELL—Located in NW of NW of Sec. 2, Twp. 1, in R. 3 west. Require deposit of $5,000 as guarantee. Full particulars to person who can qualify. Joe Milam, 206 Oil Exchange Bldg., Oklahoma City, Okla. Phone Night 4-1742, Day 2-8094.

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LEASES—PRODUCTION

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LEASES, Drilling Blocks, Royalty, Van and East Texas. W. G. Singletary, 2525 Maple Ave., Dallas, Texas.

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ROYALTIES—PRODUCTION

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ROYALTY INTERESTS, Van Zandt, Smith, Wood, Henderson, Anderson and Ector Counties, Tex. Lists and maps. James R. Haynes, Grantville, Kan.

FOR SALE—OKLAHOMA COUNTY ROYALTIES. H. T. Orcutt, 1106 Colcord Bldg., Oklahoma City, Okla.

ROYALTY BARGAINS in Oklahoma, Lincoln and Pott Counties for sale. American Inv. Co., 201 Elks Bldg., Oklahoma City, Okla.

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WE WANT good oil and gas royalties. Send us full information with reports. U. S. Royalties Corporation, C. A. Johnson Bldg., Denver, Colo.

BUY ROYALTY. The royalty that sells for a few dollars today is the high priced production royalty of tomorrow. We have it at all prices. ELMER S. and FOX WOOD, 712 Herskowitz Building, Oklahoma City, Okla. Phone. 7-3514.

ROYALTIES—PRODUCTION

JACK COUNTY ROYALTY—One-half royalty, 1,000 acres North and East Half Jack County. James T. Cumley, Wichita Falls, Texas.

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We want Eastern representatives to handle good royalty proposition. Wood Petroleum and Royalty Corporation, 712 Herskowitz Building, Oklahoma City, Okla.

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WANTED: Small producing royalty. One or two barrels daily. Give location, full detail and cash price. Address Box E-122, The Oil and Gas Journal, Tulsa, Okla.

DRILLING CONTRACT wanted on 10,000 acres, Oldham Co., Texas. Good structure, determined by experienced geologist. R. Walthall, Amarillo, Texas.

Chicago Week End Consumption Good

But Jobbers Are Buying Only Fair Quantities on Contracts and Spot Market Business Is Very Moderate

By J. B. Waldo

CHICAGO, Mar. 10.—The week end consumption of gasoline was heavy in the vicinity of this city and large over the territory as evidenced by reports of station owners and managers but distributors are so well supplied that they are not ordering any great quantity of gasoline. Station managers for some of the larger companies were sending in requisitions for a considerable number of cars but the average jobber was only buying fair quantities on contracts and purchases in the spot market were very moderate this morning. Although the buying was not heavy, the feeling was that the consumption would soon bring about a more active movement in gasoline. It was this feeling that gave a better tone to the market and added firmness to prices. The major refiners are still holding the same prices for all gravities of gasoline their U. S. Motor being offered spot buyers at 6½ cents. The general spot market was 5⅞ to 6 cents with some holding firmly to the 6-cent price but most willing to sell at the slightly lower price if necessary to secure business. Only an occasional small lot could be had at 5¾ cents this quotation being scarce and not likely to be repeated. There was some inquiry for natural gasoline chiefly Grade A.

Kerosene Quiet

Kerosene was quiet with 4⅛ to 4¼ cents the usual price range although some of the jobbers stated that they would buy at 4 cents. The demand for furnace oils is very light, the tank car market being almost stagnant. There was some inquiry for industrial fuel oil this morning and some business was closed but the volume was small.

Many salesmen spent considerable time today calling by long distance customers whom they thought must be so low in their storage that an order could be had but the success was small most of the jobbers stating that they were supplied for the present. There was much complaint made by them of the condition of the roads particularly in the Northwest where the dirt roads are very soft.

Spot Sales Trend

The spot sales in this market have been gradually decreasing until at present they form but a small fraction of the total volume of gasoline distributed and consumed in this territory, yet they are an important indication of the trend of the market. No accurate figure is obtainable of the percentage of spot sales to total sales, but it is quite commonly stated they cannot be more than 10 per cent of the total volume of gasoline moved in this territory and some believe this percentage is excessive. It is certain that more than one-half the consumption is supplied through the major companies' own stations and the bulk of the remaining consumption is supplied through the contract customers of the larger refiners in Group 3, and elsewhere. There are a considerable number of jobbers who rely on their spot purchases to supply their needs and there are others who contract for a part of their requirements but buy regularly some part of their gasoline in the spot market. In addition there are some jobbers who contract for supposedly their entire requirements but who do buy in the spot market, whenever that market is sufficiently below the price stipulated in their contracts to make it profitable for them. Low prices in the spot market attract more buyers and the activity of the spot sales indicates the comparative attractiveness to the buyer of the spot price compared with the contract price.

The amount of spot business that can be done by any one of the larger companies in the event that they decided to meet the quotations of the smaller refiners and the blenders of motor fuel some of which cannot logically be called gasoline, would be so limited that they do not figure it pays them to seek this business on a basis of price and that would have to be the basis. If one of the larger companies reduced its price to the level of the going spot market, it is probable all or nearly all of the other major companies would meet the move and the amount of additional business that would result to each would be trifling. In addition it would probably result in a reduction of the price range and reduce their contract price correspondingly and the gain, if any, in business would be offset by a reduction in profits. Recently the major refiners selling through this market have been holding for a price of 6½ cents, Group 3, for their U. S. Motor grade. Their sales have been very small at this price. One of the largest companies which sells to the jobber in tank car lots, states that its spot sales in this office do not average more than a car a day and inquiry shows this is a rather high average of spot sales as others almost or equally as large are not selling as much gasoline to spot buyers.

Reason Is Obvious

The obvious reason for this failure to sell more gasoline in the spot market is the lower price at which the same grade of motor fuel can be had from smaller refiners and from refiners who are located in differential territory and practically offer their gasoline to the trade at a delivered price. Gasoline from the sellers who cater to the spot market buyer have for some time ranged from one-half cent to a full cent below the price at which the major refiners quoted the same grade of material. Possibly some of this gasoline was not really as desirable as the motor fuel which would be supplied by the major refiners but it was acceptable to both the distributor and his trade. One of the favored contentions of the sales departments of the major refiners is that the gasoline from these smallers refiners as a class is not the equal of their product. There are some cases in which this is true and it might be replied that some of the gasoline shipped to customers by major refiners has not stood the tests as to gravity, flash and endpoint but it would not be fair in either case to attack the product of either the large or the small refiner on the evidence furnished by a single car.

Another standard argument against the smaller refiners is that they are not making any money and will not be in business much longer. This argument has been made for 10 years at least and the obvious answer is that the smaller refiners still are in business and must pay their bills. They are still enlivening the trade by a certain amount of very real competition. The fact of the wide spread between the spot price of the major refiners and the smaller sources of supply is the excessive quantity of gasoline which has been run, partly in anticipation of the coming season and partly for a number of less real reasons which were not without their influence on the management of the various refineries.

Better Tone

There was some betterment last week in a general way. There were some local soft spots but on the whole the movement of gasoline was on the gain and prices had a better tone. Low quotations could be met with right up to the end of the week, but they were by no means as generally made. Quite a number of responsible refiners were merely sitting on the side line, not making any real attempt to move their gasoline until the market showed a better condition and they could sell at beter prices. There has been some doubt of such a change coming very soon and some even believed the entire year would be one of very low prices, not 5¾ cents for U. S. Motor but of prices which were under a fair rate for the product. Some sales managers were of the frank opinion that 7 to 7½ cents would be the top price obtainable for U. S. Motor this season, and only one or two believed 8-cent U. S. Motor gasoline was a possibility. There was last week a much better demand on contracts, instructions generally being promptly given and for regular quantities specified in the contracts. Some buying for storage was also reported and the spot demand, although still light, was more active and sales a little better. At the close of the week, there was a really active inquiry from jobbers who seemed impressed with the fact that now might be a very good time to do some buying of gasoline. The price situation was also better and several of the concerns which had been asking 5¾ cents advanced their price to 5⅞ and 6 cents. The North Texas refiners are pretty well sold up and are holding for 5¾ cents for resale and the Oklahoma refiners were not quoting under 6 cents for resale with the possible exception of one or two small plants. Any small refiner who is in need of business should be able to get enough to take him out of the market for a while and the present outlook is that when he comes back into the market he will be able to secure better prices. Locally there have been some fag ends of contracts which have been seeking a customer for a limited quantity of material and some gasoline has been still on sale by second hands. The student of marketing petroleum products is now finding that at times there are possibilities of procuring gasoline and other products from differential points which can be sold to jobbers in certain sections well under the Group 3 price. Some sales managers believe the time is bound to come when every refiner will quote a delivered price to his customers and in quoting will be obliged always to take into consideration the price at which gasoline or other product can be sold from other refining districts. The practice of basing all prices on Group 3, while still convenient, is passing away, as refiners in other centers more and more use the advantages of freight costs which they may have. Practically every good jobbing concern today knows the delivery cost of gasoline from practically every available refining center which he might hope to use as a base of supplies.

Higher Gravities

The demand for the higher gravities is barely holding as the warmer weather has increased the consumption of U. S. Motor gasoline. The offerings have been quite free and even the North Texas refiners have had some material of these gravities, which they could ship at once in spite of the export business recently placed. Natural gasoline has been in better demand and prices quoted by the makers and the marketers here have been a little higher. The country conditions continue in advance of the season as regards the weather. The roads are generally very soft and travel by auto is confined to the hard roads.

The demand for antiknock gasoline is still a very prominent feature in the local industry and many contracts are being made for supplying a good antiknock motor fuel. There is no doubt that the motorists have been educated to consider an antiknock motor fuel essential to the operation of their autos. Not all motor car companies are specifying Ethyl Gasoline and while this material is generally very popular there are some jobbers who will not stock it but provide a substitute which pays them a better margin and on which they are not so closely restricted in their sales methods. One of the reasons for the popularity of the California gasoline along the East Coast and as far inland as eastern Ohio, is its antiknock value. One of the eastern oil companies has a very large demand for California gasoline as far west as eastern Ohio and is arranging to improve its supply of that material and to press its sales still further westward. It is not impossible that if the sending of California gasoline to the East Coast through the Panama Canal continues on a large scale some of it may find its way to the eastern part of the Standard of Indiana territory.

Distillates Easy

The mild weather has cut into the sale of all kinds of furnace oils so seriously that the market is very quiet and prices weak. The weakness has been increased by offerings from refiners who have become convinced that any large demand is over for this season, and who wish to move their stocks while there is yet some possibility of so doing. Distillates are very easy to buy and some 38-40 light distillate is being offered to the distributors at 3 cents and could be bought at 2⅞ cents for prompt movement. One refiner quoted by wire on a 32-36 zero, straw gas oil, a price of 2⅜ cents, Group 3. It is possible the gas oil was not a full 32-36 but a 28-30 but even at that gravity, the price was much lower than the oil could have been sold for not over 30 days ago. There are any number of refiners who are holding distillate and zero gas oil which they would like to move now at much lower figures than they refused a little while back. Of course the weather here has broken all records for more than 60 years and no one could have told in advance what the season would be. As one result of the rather sudden drop in the demand, there has been the not unexpected default in contracts. Few of the distributors have taken in the entire quantity of all kinds of furnace oil for which they contracted in the summer and early fall of last year. The season has been a disappointment and the sole desire of all parties is to get affairs adjusted and be rid of it for a few months. The colder weather of the first part of last week brought a limited number of instructions to ship single cars at once on contracts. Many distributors are sufficiently supplied, they believe for the remainder of the season and any business in furnace oils for the refiner or wholesale dealer will be of limited volume from now on, even with rather cold weather for the season. In the absence of any volume of new business, prices are generally quoted as unchanged, with a weak undertone.

Fuel Oils Lag

The movement of heavy industrial fuel oils continues to lag behind last year at this time. Many refiners who have been selling their fuel oil are holding their former prices but there are rather free offerings of oil from other sources and even the West Texas plants have offered some fuel and indicate their expectation that they will have some more to offer a little later. The Shreveport district has been offering several grades of fuel oil. Little of these offerings are at all like the older fuel oil, the product of the straightrun stills. The price situation is very unsettled but it is

(Continued on Page 206)

Weakness in Eastern Refined Market

Not Much Likelihood of Immediate Improvement Now Seen but Stabilization Is Thought to Be Assured Later

By A. E. Mockler
New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, Mar. 10.—Borrowing a phrase from the stock market, the "long pull" prospects of the East Coast refinery market have shown marked improvement during the week just ended, although the immediate outlook is much less favorable. General weakness in refined products continues, with not much likelihood of immediate improvement. Refiners and marketers in this area are pinning their hopes for stabilization on the program of refinery curtailment now receiving the endorsement of leading factors in the East, and the belief is expressed that the long sought for "stabilization" is just around the corner.

Large integrated companies with important interests in South America, as well as domestic fields, are showing a disposition to bring their foreign operations under the scope of the domestic curtailment activities of the industry, and this tendency, it is believed, heralds the dawn of a new era. Notwithstanding the encouraging progress of the curtailment and conservation policy in the United States, the rank and file of the industry has gazed with misgivings at the steadily growing imports of crude oil and gasoline from South America. The inclusion of South American operations in the curtailment movement, it is felt, will do much to strengthen the morale of the industry in general, and give new impetus to the curtailment plans of trade leaders.

Oversupply is vieing with overcompetition in keeping the gasoline market in an unsatisfactory condition in the East, and the market currently is showing less stability than for a year or more past. The race for gallonage continues unabated, and under these conditions price cutting has again come into its own in large measure as a weapon for holding business and garnering new accounts. This situation is coming in for serious consideration, however, and will probably be corrected at an early date.

Tank Car Gasoline

The posted price of 8½ cents appears to be the exception rather than the rule in current sales, and the general "going" price on tank car shipments is closer to 8¼ cents, with 8 cents being freely done in some quarters of the trade. Present indications point to a general lowering of the posted price to 8¼ cents at refineries, or possibly as low as 8 cents. The last cut in the tank car price, which amounted to but one-quarter cent, failed of its purpose, as it brought the market to a level still a quarter cent over the basis at which competitive business was being done.

Cargo business is being done at 7¾ cents on U. S. Motor gasoline in barge lots, giving large distributors with tidewater facilities a marked advantage in competing for business in their home territories.

Refiners believe the contemplated reduction by one-seventh of refinery runs will have a beneficial influence upon the gasoline market in the East, and it is thought that general acceptance of this curtailment plan will tend to get the market on a firm footing by the time the summer motoring season gets under way. The benefits of this curtailment, however, are not expected to be apparent immediately, and refineries will be faced with the necessity of working off considerable surplus holdings before the statistical position of the market in the East reaches a satisfactory position.

Tank Wagon Gasoline

Premium gasolines are coming in for considerable attention on the part of marketers, these special fuels having largely escaped the baneful influences of the price-cutting epidemic which has created such havoc in the market for U. S. Motor. One of the largest eastern integrated companies, with virtually national distribution, is reported planning to add Ethyl Gasoline to its line of products.

Tank wagon and service station prices were reduced 1 cent throughout New England during the week, but the market is still greatly disturbed in many sections, with prices over given territories showing a lack of uniformity, due to local price cutting to meet competition in certain areas. This price cutting is made necessary not only to meet competition of local independents, but is being resorted to in territories where several of the larger factors may be competing for gallonage as well. Further cuts in tank wagon and service station prices loom as the logical outcome of the current weakness and price cutting in refinery gasoline markets. Volume has held up fairly well in tank wagon sales during the week.

Kerosene

Although the market is showing the effects of competition, the situation has not yet reached the point where price cutting has become general, and principal refiners are still adhering to the 7¾ cents quotation in the tank car market. The market locally and at New England points is currently showing more stability than is true at Philadelphia and points South, where competition of Pennsylvania refiners has proven a factor and has forced concessions in competitive selling in some instances.

Warm weather over a great part of the East tended to cut into jobbers' kerosene sales, and in consequence, there has been some curtailment in tank car movement for the period. Jobbers are not filling their storage, and are carrying only sufficient stocks on hand to take care of immediate requirements, holding down to a hand-to-mouth basis for fear of being caught with large stocks on hand or rolling in the event of a price reduction.

Tank wagon sales of kerosene have also shown the effects of the milder weather, but notwithstanding this, refiners and marketers are adhering to previous tank wagon price schedules. The outlook for spring business is generally regarded in an optimistic light.

Lubs

Bright stocks, which have shown exceptional quiet during recent weeks, have finally yielded to the pressure for lower prices, and spot quotations were reduced 1 cent per gallon on both the light and dark this week. Light bright, 140-150, is available at 48½ to 49 cents per gallon, in barrels, Bayyonne, with the dark held at 47½ to 48 cents. Price changes have been lacking on other cylinder oils, but the entire list is easy, with the market susceptible to shading.

Domestic compounders have been withholding spring buying unusually long this year, and this in large measure has tended to upset refiners' sales plan. Many of the Pennsylvania refiners had anticipated a heavy domestic demand by the start of the current month, and had been holding their prices firm in the face of lack of buying in anticipation of the spring movement. Current indications are that this buying will be still further deferred, making the immediate market outlook rather easy.

Compounders' stocks are reported to be heavier than usual for this season of the year. This condition has developed, it is said, as a result of the unusual severity of the winter, which has cut lub oil consumption and left compounders in a position where they find it advisable to dispose of carryover stocks before entering the market for additional supplies.

Contract movement of red and pale oils has been well maintained, in the face of quiet in manufacturing operations in some lines, and this branch of the market is fairly well stabilized as to prices. In addition to the regular contract shipments, refiners report a moderately active demand for spot stocks, with these oils also moving into export channels in good volume.

Paraffin Wax

Reductions in prices put into effect during the preceding week have evidently failed to readjust the market to conformity with buyers' price ideas, and volume of new business has been rather insignificant. Contrary to general expectations, domestic manufacturing consumers have not yet come into the market for paraffin for their second quarter requirements in any large volume, and current indications are that many buyers who normally contract ahead for a three months' period will count largely upon spot market buying to carry them through the second quarter of the year.

Buyers point to the weak statistical position of the market, as indicated by the topheavy refinery stocks in this country, as justification for lower prices, and it is evident a protracted siege of hand-to-mouth buying is in sight unless some radical developments should make their appearance.

Export buyers are in the market looking for distressed offerings of paraffin wax and it is believed some fair-sized parcels are being cleared off the domestic market in this manner, both here and at the Gulf. It is very much a buyers' market on most melting points, in both crude scale and refined.

Fuel Oil

The proposed reduction in refinery runs has brought about a somewhat more cheerful feeling in the fuel oil market, although the contemplated one-seventh cut in refinery runs is not expected to have any immediate effect upon the market, from a price standpoint. This curtailment is expected to be instrumental in aiding to correct the conditions of overproduction which has become more or less chonic with fuel oil in the past few years.

Refiners at East Coast terminals continue to quote bunker "C" at $1.05 per barrel, in bulk, at terminals, and a good movement is in evidence. Marine consumption is well up to last year's totals, and domestic demand is also holding up fairly well. The past year witnessed a slight decline in bunker oil volume at East Coast ports, and refiners are endeavoring to correct this situation in their 1930 selling operations. It is probable that East Coast refiners will have all they can do to hold their own in sales volume this year, as California is again becoming more of a factor in Eastern fuel oil markets. There is a probability that refiners in the New York harbor area may be able to cut into the Detroit market this year through shipment of fuel oil to that city by water.

Diesel Oil

Several important additions to the Diesel-buring vessel fleet operating out of New York are scheduled within the next several months, and this will go far toward swelling local sales figures for this class of oil. Refiners quote the market unchanged at $2 per barrel, in bulk, f.o.b. East Coast refinery terminals on the general run of contract business, with small spot sales generally put through at 10 cents per barrel over this figure.

Marine consumption is largely under contract, and refiners report good withdrawals this week, with a fair volume of spot business also reaching the market. Refinery stocks of Diesel oil in this area are understood to be moderate, and the proposed curtailment of refinery operations will undoubtedly bring about a firmer feeling in the marke.t

Gas Oil

The situation is without appreciable change in this division of the market. Refiners are still nominally holding the posted price at 5¼ cents per barrel, bulk at refinery terminals, with most of the current business going through under this figure. Average selling prices for 28 plus recycled oil are 5 cents per gallon, with some sales being made at 4¾ cents.

Demand for gas oil for delivery against furnace oil contracts is showing a seasonable decline, and the peak of this movement is over for the year. Refiners are expected to cut production of gas oil as part of their contemplated general program of refinery curtailment over the next few months. Export movement of gas oil is small and foreign sales are not much of a factor at present.

With important natural gas pipe line projects under way and under consideration in many other sections of the country, the local refinery trade is now inclined to treat more seriously reports of contemplated construction of such a line to supply natural gas to the Metropolitan area. A line of this type, it is declared, would be perfectly feasible, to link up the natural gas fields of West Virginia, Ohio, Kentucky, and other states with New York, and it is now considered only a matter of time before a line of this type becomes a reality. Construction of a line of this character would naturally have a great bearing upon the local market situation, but refiners believe that natural gas so transported would be used largely for industrial purposes, with some of this gas probably going to the big utility companies operating in this territory to be used in enriching low-grade manufactured gas. Under these conditions, it is pointed out, there would still be a fair market for gas oil in this territory. Refiners expect that by the time a natural gas pipe line to New York becomes a reality, consumption of gas oil in domestic heating plants will have developed to the point where much of the slack in the gas oil market which would be caused by a curtailment of consumption by the gas manufacturing companies would be taken up in domestic oil sales.

Export Markets

Reduction in export gasoline and kerosene prices at the Gulf has failed to stimulate open-market trading to any extent, and no new cargo fixtures are reported. There is still a good amount of motor fuel moving into export channels through the Gulf on contracts previously placed.

The California situation has been complicated somewhat by the practice of one or two sellers in selling on a c.i.f. basis, which leaves the remainder of the trade in a quandary as to the actual netback in such sales.

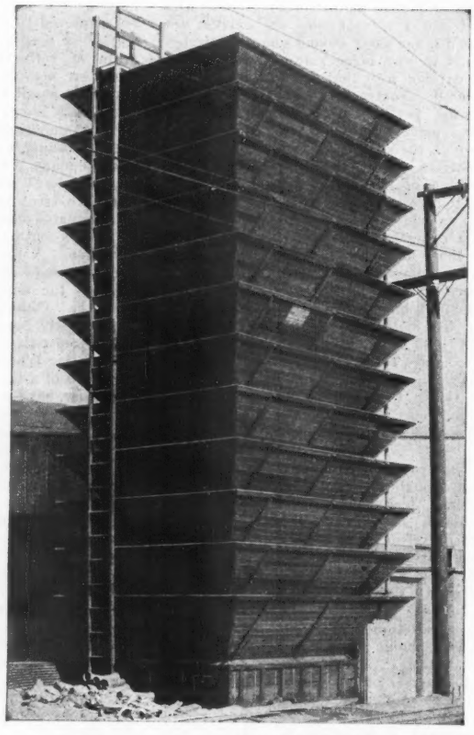
Fuel oil for export has strengthened at the Gulf and is held at 70 cents, up 5 cents. The advance is attributed solely to the better feeling engendered by the proposal to cut refinery operations by one-seventh with a resultant curtailment of bunker oil output.

Export buying of refined products in Eastern markets has been rather routine. Cased gasoline and kerosene has moved out in fair volume, and shipments of gasoline and naphtha into export channels have been well maintained. New buying has been absent in the cylinder oil market and the same is true with respect to paraffin wax.

(Continued on Page 206)

COLDER WATER

With the *New* FLUOR COOLING TOWER



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The New Tower Offers You:

(1) Perfect distribution.

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(3) Maximum cooling per square foot of ground area.

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Natural Gasoline Manufacture

Lone Star Company Equips Trucks to Sell Liquefied Gas

The Lone Star Gas Co. of Dallas, Tex., recently started the manufacture and sale of liquefied gas. The gas consisting of the butane and propane hydrocarbons is manufactured at the company's Gordon, Tex., natural gasoline plant.

The company is a large producer and seller of natural gas in Texas and the liquefield gas distribution supplements the pipe line distributing service. In communities and rural sections not served with the pipe line systems the liquefield gas compressed in cylinder is offered.

To demonstrate the uses of the gas sold under the trade name of "Stargas" the company has designed and built a specially equipped truck as shown in the accompanying photograph.

The interior of the truck discloses a completely equipped kitchen, with few details overlooked. On the floor is attractive linoleum, appropriate kitchen drapes are at the windows, drain boards are on both sides of the sink and a complete kitchen cabinet is built in. The range and water heater are vented through the top of the truck. A special built ironing board is handy for setting up and ready for use with the gas iron. A gas range and water heater are well placed, as is also the gas refrigerator. Two aluminum painted cylinders holding Stargas are concealed in the cabinets on the rear of the truck, strapped in and well supported for travel over the country roads on which the truck travels.

Before a demonstration is made the truck is driven into a filling station and the air hose of the station is connected to a valve on an air line which leads to the air tank, built in above the driver's seat. This tank is charged to about 35

(Continued on Page 210)

SHIPMENTS DECLINE IN TEXAS DURING JANUARY

FORT WORTH, Tex., Mar. 8.—Shipments of natural gasoline from the several manufacturing areas of Texas showed a small decline compared to the December totals according to a report based on actual shipments for the month. The decline is due largely to proration agreements which restricted the quantity of casinghead gas available.

The following report shows the shipments by areas for January:

Panhandle District	
County—	Bbls.
Carson County	55,776
Hutchinson County	242,785
Gray County	292,714
Potter County	6,607
Moore County	13,841
Wheeler County	19,471
Total	631,194
West Texas District	
Crane County	34,296
Howard County	748
Mitchell County	347
Reagan County	28,333
Pecos County	7,983
Total	71,807
Wichita Falls District	
	(Gals.)
Archer County	224,811
Clay County	214,787
Jack County	219,488
Wichita County	1,691,112
Wilbarger County	418,557
Young County	506,121
Total	1,274,876
Ranger District	
	(Gals.)
Eastland County	4,455,511
Stephens County	4,110,560
Jones County	91,820
Brown County	582,412
Coleman County	414,233
Comanche County	3,905
Palo Pinto County	558,906
Shackelford County	571,878
Total	10,789,225

GOVERNMENT LATEST REPORT SHOWS CONTINUED DECLINE IN PRODUCTION

Natural gasoline production in United States in January with a total of 185,200,000 gallons was 2,000,000 gallons less than the total for December according to latest report of Bureau of Mines. The decline in January continues a trend in national output which got under way in November following a long period of monthly increases.

The January daily average of 5,970,000 gallons compares with a daily average of 6,650,000 gallons in October, 1929, which was the highest production in the history of the natural gasoline industry.

The January decline materalized despite the fact that California production totaled 69,800,000 gallons which compares with a production of 65,100,000 gallons in December. California natural gasoline production declined rapidly in December due to the curtailment agreements in the flush fields of the state. The curtailments restricted the flow of the wells and this was immediately reflected in the quantity of casinghead gas available at the natural gasoline plants. More gas was available again in January and this accounts for the greater production.

In Texas and Oklahoma continued curtailment in flush fields and the decline in the older areas brought another decrease in monthly production which more than offset the increase in California. Oklahoma production dropped from 54,600,000 gallons in December to 50,000,000 gallons in January, and Texas declined from 40,000,000 gallons to 37,200,000 gallons. The reductions were general in both states indicating that production of some of the older plants is declining in fields where there have been no curtailment programs in effect.

The Government in January started a monthly report on the production in the Oklahoma City Field. The production for the month was 1,800,000 gallons or approximately 60,000 gallons daily. At present this is the most important area in the Mid-Continent field so far as increasing production is concerned. Since January additional plants have been completed with more plants or enlargement programs under way. This expansion shows a continued increase in output in that field despite the fact that the entire area is operated under a curtailment program amounting to approximately 85 per cent.

NATURAL GASOLINE PRODUCTION (Thousands of gallons)

	Jan., 1930	Dec., 1929	Jan., 1929	Stocks end of month Jan., 1930	Stocks end of month Dec., 1929
Appalachian	10,900	10,300	11,400	3,411	2,709
Illinois, Kentucky, etc.	1,400	1,400	1,400	404	310
Oklahoma	50,000	54,600	55,100	10,626	9,132
Oklahoma City	1,800	(*)	.....	196	(*)
Osage County	6,200	7,300	7,100	2,721	2,099
Seminole, etc.	23,600	25,200	26,400	2,395	2,575
Rest of State	18,400	22,100	21,600	5,314	4,458
Kansas	2,600	2,800	3,100	535	545
Texas	37,200	40,000	31,200	7,147	9,304
Panhandle	19,000	20,100	12,200	3,071	4,732
North Texas	3,400	4,200	3,900	1,006	1,141
West Central	11,500	12,300	13,500	2,520	2,918
Rest of State	3,300	3,400	1,600	550	513
Louisiana	7,700	6,300	5,100	1,030	1,007
Arkansas	2,400	2,600	2,700	246	291
Rocky Mountain	3,200	4,100	3,300	584	547
California	69,800	65,100	54,000	1,688	1,517
Long Beach	14,800	15,100	18,400	....	....
Ventura Avenue	5,500	5,400	6,000	....	....
Seal Beach	3,200	3,300	2,700	....	....
Huntington Beach	3,500	3,700	3,800	....	....
Santa Fe Springs	21,300	19,200	9,000	....	....
Rest of State	21,500	18,400	14,100	....	....
Total	185,200	187,200	167,300	25,671	25,362
Daily average	5,970	6,040	5,400	....	....
Total (thousands of barrels)	4,410	4,457	3,983	611	604
Daily average	142	144	128	..	..

*Included in "Rest of State."

Construction and Operation

THE RESEARCH DIVISION*

In a previous article it was stated that it was uneconomic to maintain a complete staff of technical experts at every natural gasoline plant. It was also observed that over and above its research and development functions, there devolved upon the research division a definite operating responsibility. In a strict sense, it acts in an advisory capacity. It is best for the smooth functioning of the organization that its responsibility should be limited to advice. It is often far better to lose a little in efficiency occasionally than to have friction in the organization and reap greater losses in consequence. It is for this reason that the research division is responsible to the head of the gasoline department, and serves as technical adviser only to the operating superintendent.

Prior to the era of fundamental gas analysis, it was the duty of the research staff to make an equipment check from time to time. A member of the staff would take all temperatures and pressures on, and/or samples from, absorbers, stills, run tanks, vent tanks, reabsorbers, oil coolers, gas coolers, gasoline condensers, steam lines, etc., etc., atmosphere and wet bulb, and, on the basis of predetermined calculations, determine whether all of the equipment is functioning satisfactorily.

If an exchanger, for example, did not do its required amount of work, the fact would be reported to the general office and to the plant superintendent. The plant superintendent would in practice not await orders from the office, but would proceed to tear down the unit to learn whether that particular exchanger was "by-passing," or was caked up with sediment, paraffin, or whatnot from the mineral seal oil, or whether some of the tubes had disintegrated, causing the lean and fat oil to blend.

In a preheater, the trouble might be traced to a few "eaten out" tubes; in an absorber or still, a few bubble caps or "down-spouts" may have corroded.

With the coming of fundamental analysis, a material balance is made periodically to determine plant efficiency from a production standpoint. The production is balanced with the available gasoline in the raw gas. Volumetric figures alone do not suffice for the check-up. With the fractionating column, gasoline produced and sold is analyzed as to constituent composition, and the volume of gasoline of like composition in the raw gas is determined. If more than the predetermined percentage of desirable constituents is observed in the residue gas, and the material balance justifies the conclusion that the analysis is correct, the causes of deficiency are then sought. Temperatures and oil circulation are checked, and then the performance of the individual equipment ascertained, until the faulty unit is found and steps for correction instituted by the operating staff. If new equipment is necessary, the general office will have the findings of the research staff before it and adequate action can be taken with the loss of the least possible time.

Routine Function

The research division also has a routine function to perform by way of making water analysis and recommendations for treating waters that are unfit for boiler and/or engine jacket use. If the treating problems are passed to outside chemical houses, the check analysis give the office the satisfaction of having first-hand information about its problems.

The treating of sour gasoline for doctor and corrosion is outlined by this research staff. This is a particularly onerous problem in the Panhandle, West Texas, and other areas where natural gasoline is high in hydrogen sulphide and mercaptans. From time to time the staff is expected to check up on the equipment, operation, and costs of treating. It is quite easy to lose control of costs in this phase of the business.

When a new gasoline plant situation is investigated, samples of gas are sent to the laboratory for analysis, for the double purpose of checking field-physical and charcoal tests, and to determine the character of product that may be anticipated and the kind of plant best suited to the processing of that gas. This subject will be discussed in another article and at greater length under the research and development functions of the research division.

*Third of a series of articles explaining the inner workings of a natural gasoline organization. The series was prepared by a manufacturer actively engaged in all phases of construction and operation.

SUPPLY UNIVERSAL AIR LINES

Universal Aviation Corp., a division of American Airways, mail and passenger ships are to use Phillips "77" aviation gasoline exclusively, according to an announcement of the Phillips Petroleum Co. Universal operates the largest unit of American Airways, Inc., the operating company for the Aviation corporation. The single and multimotored ships of the Universal system fly 15,000 miles daily over mail, express and passenger routes.

The contract between Phillips and Universal calls for a minimum daily delivery of 5,000 gallons of aviation gasoline to airports on the Universal routes including Cleveland, Akron, Chicago, St. Louis, Kansas City, Evansville, Cincinnati, Omaha, Indianapolis, Terre Haute, Peoria, Springfield, Louisville and Dayton. Phillips equipment for servicing Universal planes will be installed immediately on ports not already equipped. Universal's 1930 consumption of gasoline will probably exceed 2,000,000 gallons.

Brief Items for Petroleum Refiners

WILCOX BUYS PAMPA REFINING COMPANY

The Wilcox Oil & Gas Co. has practically completed negotiations for the purchase of the Pampa Refining Co.'s plant in Pampa, Tex. This was built by Reese Allen and his associates about two years ago and has been operated continuously since then. At present the plant has a 3,000-bbl. capacity and the Wilcox company expects to operate the plant at capacity with no changes in the equipment planned for the immediate future. Pressure stills may be added in the future but nothing definite is announced.

This will give the company two refineries and a refining capacity of 7,000 bbls. The other refinery is located at Bristow, Okla. The sale of the products of both plants will be handled by sales offices in Tulsa. The company has several bulk and service stations in West Texas which will be supplied from the newly acquired plant and other marketing facilities will be built there, while the balance of the refinery production will be distributed throughout the Middle Western states. Crude produced locally by the company will be run.

DROP MARKET SURVEY

WASHINGTON, D. C., Mar. 8.—The Department of Commerce has been conferring with a committee of the American Petroleum Institute with respect to its tentative plan for making a study of the activities of gasoline marketing in the Southwest. It has now been decided that owing to the lack of funds available to the Department for such a purpose it would be impossible to make an adequate study of this subject and they feel that a half-truth would be of little value if not actually unfair to the gasoline industry so the matter has been deferred for future consideration. The department, however, hopes to complete its studies covering the other activities of the petroleum industry in the Gulf Southwest about the middle of this year. This will cover the relationship of the industry to the economic growth and prosperity of that section.

CREW-LEVICK OPENS TERMINAL

NEW YORK, Mar. 10.—Crew-Levick Co., subsidiary of the Cities Service Co., has started operation of its new marine terminal at Perth Amboy, N. J. The new terminal has 1,000 feet of water frontage on the Arthur Kill, in the Bayonne refinery district, and consists of four 80,000-bbl. tanks, one 30,000-bbl. tank, and six 20,000-bbl. tanks, in addition to a tank station, warehouse, garage, pipe lines and pump house. The plant covers 50 acres and is designed to take care of the company's business in New York State.

Tank wagon, tank car and barge deliveries will be made from the Perth Amboy terminal, which is under the management of Joe Wilde, formerly of the company's plant at Petty's Island.

WITHDRAWS FROM SPOT MARKET

CHICAGO, Mar. 8.—The Indian Refining Co., having reduced its crude runs, has withdrawn all offers of spot gasoline to the trade. The company does not expect to have any motor gasoline to sell this season as its own distribution and sales to contract customers will require all of its output for the period. The recent selling of a large number of cars of its motor gasoline to marketers was it is claimed a seasonal occurrence due to decline of consumption and the heavy receipts of crude.

NEW PRESIDENT OF W.P.R.A. HAS VARIED EXPERIENCE IN REFINING

L. R. Crawford, president of the producers and Refiners Corp. and newly elected head of the Western Petroleum Refiners Association, has spent 28 active years in the refining and marketing divisions of the oil business. He also operated independently as a crude oil producer for a time.

Among his associates in the Mid-Continent Field he is known as an outstanding economist and market student. As the executive head of his company he has kept in close touch with the operation of its refineries and as chairman of the manufacturing committee of the association he has been active in promoting the co-operative consideration of technical developments of vital importance to plant operators. He has consistently stressed the benefits which would accrue to the entire industry through the development of new markets for petroleum products and from time to time has suggested methods whereby the demand for old products could be enlarged.

Mr. Crawford's experience in the refining business has been varied. His connection with refining organizations has taken him not only to all parts of the United States but also to South American and European countries. He formerly was employed by the Atlantic Refining Co. and later with the Vacuum Oil Co. and the Paragon Refining Co.

He resigned the presidency of the latter company several years ago to accept his present position with the Producers and Refiners Corp., a subsidiary of the Prairie Oil & Gas Co. The subsidiary company operates refineries at Tulsa and Parco, Wyo. He makes his headquarters at Independence, Kans.

During the past year Mr. Crawford has served the association as vice-president, taking an active interest in all phases of its activities.

L. R. Crawford

NEW WAGGONER PIPE LINE SERVES FIVE REFINERIES

Five refineries in the Wichita, Tex., area are being supplied by the Waggoner Refining Co.'s new pipe line from the south Wilbarger County pools. These include the Taxman Refining Co., Orient Petroleum Co., Falls Refining Co., Dale Oil Refining Co., and the Iowa Park Refining Co.

The pipe line is 30 miles long and runs directly into the refining district of Wichita Falls. The capacity of the 6-inch line is about 15,000 bbls. daily at a pressure of 750 pounds. The pumps are operated by electricity, but capacity loads are not being carried by the line yet.

C. F. Kolp, manager of the Waggoner Refining Co., has charge of the pipe line. The purpose of the construction of this new line is to provide independent refiners with crude oil at current prices, R. L. More, manager of the Waggoner estate, said.

N.P.A. CHANGES DATE

The National Petroleum Association has changed the dates of its next semi-annual meeting to April 23 and 24 instead of April 24 and 25 as first announced. The meetings will be held in the Cleveland Hotel in Cleveland, Ohio. The program of the meetings will be announced in the near future.

MECHLIN RESIGNS

SHREVEPORT, La., Mar. 10.—Fred J. Mechlin, manager of lubricating sales for the Louisiana Oil Refining Corp., has resigned his position and will devote his time to research and sales work in the petroleum and chemical industries. He will also aid in the development and sales of patents owned by the Basic Patents Corp. of Shreveport.

DISTRIBUTE FROM MUSKEGON

MUSKEGON, Mich., Mar. 8.—The Standard Oil Co. of Indiana tanker "Beaumont Parks," formerly the "Renown", successfully entered the Muskegon harbor last week with the first tanker load of gasoline of the 1930 navigation season.

The tanker, which carries a cargo of about 36,000 bbls., left Indiana harbor, the port for Whiting, Ind., at 3 a. m. and 12 hours later at 3 p. m. was at the entrance to the Muskegon harbor. No difficulty was experienced in getting through the channel to the Standard Oil Co. dock at the Lakeside tank farm. The tanker will remain at Indiana harbor for inspection on March 11 and is not expected to return for the second trip to Muskegon until Thursday, March 13. From then on until all of the storage tanks at the Muskegon tank farm are filled she will make daily trips between the two ports. The Barge C also will be placed in operation for transporting gasoline to Muskegon and other Great Lakes ports as soon as possible.

Green Bay, Wis. probably will be the next port on Lake Michigan or its connecting waters to receive boat shipments of gasoline and other petroleum products. As an early breakup of the ice in all of the Great Lakes is predicted tankers will soon be making trips from Indiana harbor through the Straits of Mackinac to distributing headquarters at Bay City and to the River Rouge plant near Detroit.

ACME SALES MANAGEMENT

The Acme Petroleum Co. of Chicago announces that its sales department is now in charge of A. K. Krueger and C. B. Hampton. Both have been with the company for some time.

NO NEGLIGENCE SHOWN IN BAYWAY EXPLOSION

ELIZABETH, N. J., Mar. 8.—The explosion at the Bayway refinery of the Standard Oil Co., Linden, February 18, which resulted in the death of 13 workers and the injury of more than 50 others, was due to no negligence on the part of the company or its employes, according to the reports of two investigations made public by Prosecutor A. J. David. The reports cover inquiries made for the prosecutors by Dr. Albert E. Edel, analytical chemist of Newark, and Robert J. M. Welch of Hillside, mechanical engineer.

The reports add that the gaseous liquid that exploded was light naphtha which crept along a ditch to an open riveting forge and was ignited.

The pipes through which the naphtha was conveyed were badly corroded, but it has been impossible to find the source of the acid causing the corrosion in the pipes.

RICHFIELD BUYS MAUE OIL CO.

Acquisition of the interests of the Maue Oil Co., at Briarcliff, N. Y., with the exception of its fuel oil business, by the Richfield Oil Corp. of New York, subsidiary of the Richfield Oil Co. of California, was announced by C. M. Fuller, president of the latter. The Maue Oil Co. has two marine bulk terminals, one on the Hudson River at Ossining and the other on Long Island Sound at Rye, together with five service stations and 180 dealer accounts, all in Westchester County. This purchase will add approximately 4,000,000 gallons annually to Richfield's gasoline business in that territory.

B. F. Maue is being retained by the Richfield corporation as branch manager with offices at Briarcliff.

MANITOBA TAX INCREASED

Manitoba, Canada, has increased the tax on gasoline from 3 cents to 5 cents a gallon. This increase does not apply to gasoline used for agricultural purposes or the fishing industry. The revenue is to be used for road building and improvements. No immediate decrease in automobile license fees is in prospect but may be made next year. Other prairie provinces are expected to follow Manitoba's lead in increasing the tax.

MICHIGAN ANNUAL MEETING

CHICAGO, Mar. 8.—The annual meeting of the Michigan Oil Men's Association will be held at the Hotel Statler, Detroit, on March 19, 20 and 21. This is the annual convention and exhibit. The first day's program will be devoted to tax and legislative matters. The second day to a consideration of the Code of Ethics and the final day to merchandizing trends and policies.

MONTANA RATES DISCUSSED

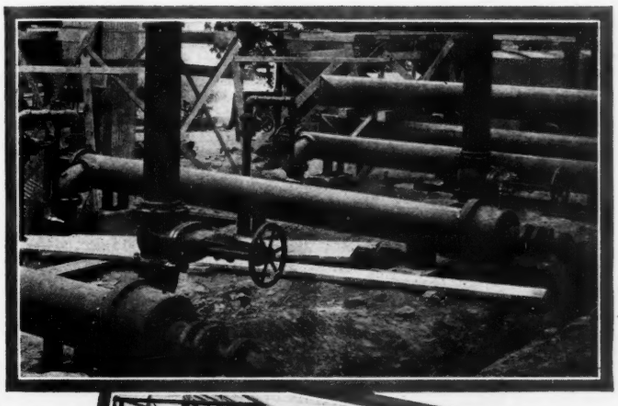
The District Court of Appeals in Washington has directed the Interstate Commerce Commission to take jurisdiction in the controversy on freight rates on petroleum and its products in Montana. This controversy grew out of an attempt by the Montana Railroad Commission to lower rates in the State.

BIRMINGHAM ADOPTS TAX

BIRMINGHAM, Ala., Mar. 10.—The city of Birmingham has adopted an ordinance imposing a tax of 1 cent a gallon on gasoline consumption. A revenue of more than $400,000 a year is expected from this source.

For cooling gas—oil—water

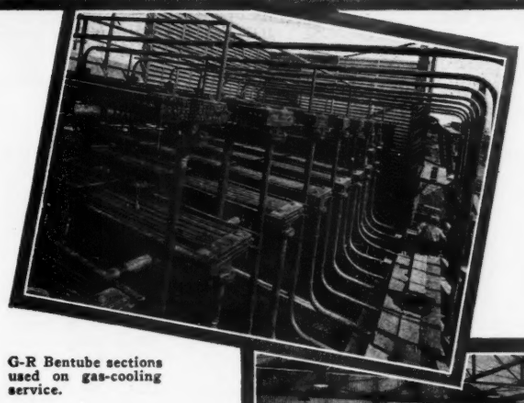
Installation of G-R Vaneflo Gas Coolers in Mid-Continent field.



IN pipe line pumping stations, as in every other petroleum industry service, Griscom-Russell Coolers have met with general approval and are widely used because of their many special features that provide high rate of heat transfer, ease of installation, dependable, trouble-free operation, and economical maintenance.

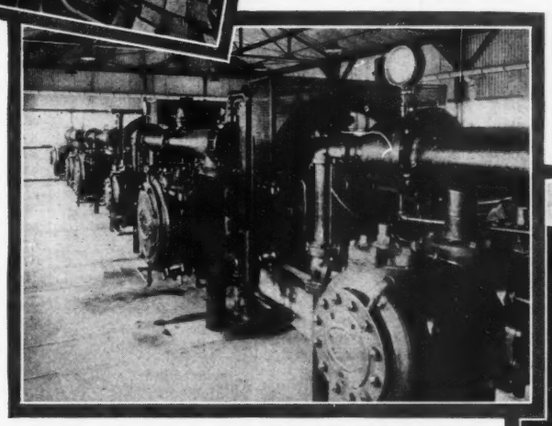
No matter what may be the liquid, gas or vapor to be cooled, the capacity or cooling range desired, and the special operating conditions to be met, G-R Engineers are prepared to study your requirements without obligation and to submit authoritative recommendations on equipment exactly suited to your particular service.

Besides Vaneflo and Multiwhirl Shell-and-Tube Coolers and Bentube Atmospheric and Submerged Cooling Sections, Griscom-Russell Products for the petroleum industry also include many types of Condensers, Heat Exchangers and Heaters, the design and construction of which are based on over half a century of experience in solving heat transfer problems.

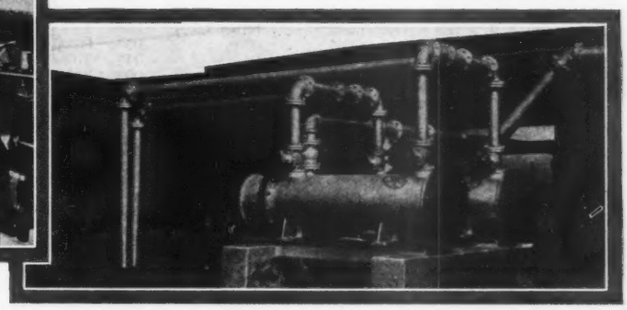


G-R Bentube sections used on gas-cooling service.

Part of an installation of G-R Vaneflo inter coolers used with two-stage air compressors.



G-R Multiwhirl Coolers used for cooling oil engine jacket water.



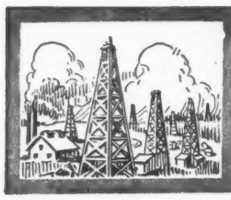
The Griscom-Russell Co., 285 Madison Ave. New York

Philadelphia	Chicago	St. Louis	Los Angeles
Boston	Indianapolis	New Orleans	Seattle
Rochester	Detroit	Dallas	Portland
Buffalo	Cincinnati	Houston	Tulsa
Pittsburgh	Milwaukee	Atlanta	Denver
Massillon	Minneapolis	Memphis	Charlotte
Cleveland	Kansas City	San Francisco	

For Canada: Riley Engineering and Supply Co., Ltd., Toronto

HEAT EXCHANGERS
CONDENSERS
Sub-cooling—Partial—Reflux
Shell and Tube, Atmospheric, and Condenser Box Types
COOLERS
Liquid—Gas—Jacket Water
Shell and Tube, Atmospheric, and Condenser Box Types
OIL HEATERS
LEVEL CONTROLLERS

Griscom-Russell
Heat Transfer Apparatus



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

OKLAHOMA (Group 3)—	Mar. 11		Mar. 4		Feb. 25	
50-52 450 endpoint	.06¼		.06¼		.06¼	
56-58 450 endpoint	.05¾	.06	.05¾	.06	.05¾	.06
*58-60 437 endpoint (U. S. Motor)	.065		.065		.065	
*60-62 437 endpoint	.065		†.06¼	.06½	†.06¼	.06½
*60-62 400 endpoint	.0675		.0675		.0675	
*64-66 375 endpoint	†.07¼	.07½	.075		.0775	
68-70 360 endpoint	.07½	.07¾	.07½	.08	.07½	.08
64-66 437 endpoint (blend)	.05¾	.06¼	.05¾	.06¼	.05¾	.06¼
NORTH TEXAS—						
56-58 450 endpoint	.05¾	.06	.05¾	.06	.05¾	.06
58-60 450 endpoint	.05½	.05¾	.05½	.05¾	.05½	.05¾
58-60 437 endpoint (U. S. Motor)	.05⅝	.06⅛	.05⅝	.06	.05¾	.06¼
60-62 400 endpoint	.06	.06¼	.06	.06¼	.06⅛	.06¼
64-66 390 endpoint	.06½		.06½	.06¾	.06⅝	.07
64-66 375 endpoint	.07	.07¼	.07	.07¼	.07	.07¼
68-70 360 endpoint	.07½	.07¾	.07½	.07¾	.07½	.07¾
64-66 437 endpoint (blend)	.05¾	.06	.05¾	.06	.06	.06¼
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.06¾		.06¾		.06¾	
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.06¾		.06¾		.06¾	
PENNSYLVANIA—						
52-54 Naphtha	.07¼		.07¼	.07½	.07	.07¼
54-56 Naphtha	.07¼	.07½	.07¼	.07½	.07¼	.07½
58-60 Gasoline	.07½	.07¾	.07¾	.08	.07½	.07¾
60 Gasoline	.07¾	.08¼	.08	.08¼	.07¾	.08
62 Gasoline	.07¾	.08¾	.08	.08¼	.07¾	.08
64 Gasoline	.08	.09	.08½		.08¼	.08½
68-70 350 endpoint gasoline	.08¾		.09½		.09¼	.09½
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.09	.10	.09	.10	.09	.10
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.06¼		.06¼		.06	.06¼
56-58 450 endpoint	.05¾	.06	.05¾	.06	.05¾	.06
58-60 437 endpoint (U. S. Motor)	.05⅞	.06½	.05¾	.06½	.05¾	.06½
60-62 400 endpoint	.06	.06¼	.06	.06⅜	.06¼	.06½
64-66 375 endpoint	.07	.07¼	.07	.07⅜	.07¼	.07½
68-70 360 endpoint	.07½	.07¾	.07½	.07¾	.07⅝	.07⅞
64-66 437 endpoint (blend)	.06¼	.06½	.06¼	.06½	.06¼	
GULF COAST (Export)—						
58-60 (U. S. Motor)	.08		.08		.08½	
60-62 400 endpoint	.09		.09		.09½	
61-63 390 endpoint	.09¼		.09¼		.09¾	
64-66 375 endpoint	.09		.09		.10	

*Weighted average prices March 10, 3 and February 24, as reported by representative refiners. Sales to jobbers only. †No. sales reported. Prices show general market.

*Louisiana, Arkansas, Mississippi and East Texas delivery.

NATURAL GASOLINE

OKLAHOMA (Group 3)—	Mar. 11		Mar. 4		Feb. 25	
Grade A, 72-79.9, 375 e.p., rec. 90%	.05½	.05⅝	.05½	.05⅝	.05½	.05⅝
Grade AA, 80-87.9, 375 e.p., rec. 90%	.05⅜	.05½	.05⅜	.05½	.05⅜	.05½
Grade B, 76-83.9, 375 e.p., rec. 85%	.04½	.04⅝	.04½	.04⅝	.04⅝	.04¾
Grade BB, 84-92, 375 e.p., rec. 85%	.04½		.04⅜	.04½	.04½	
Grade C, 80-92, 375 e.p., rec. 78%	.04⅜		.04⅜		.04½	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.05½	.05⅝	.05½	.05⅝	.05½	.05⅝
Grade AA, 80-87.9, 375 e.p., rec. 90%	.05⅜	.05½	.05⅜	.05½	.05⅜	.05½
Grade B, 76-83.9, 375 e.p., rec. 85%	.04½		.04½	.04⅝	.04⅝	.04¾
Grade BB, 84-92, 375 e.p., rec. 85%	.04½		.04⅜	.04½	.04½	
Grade C, 80-92, 375 e.p., rec. 78%	.04⅜		.04⅜		.04½	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.05¾		.05¾		.05¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.04¾	.05	.04¾	.05	.04¾	.05
Grade C, 80-92, 375 e.p., rec. 78%	.04¾		.04¾		.04¾	
CALIFORNIA—						
75-78 375-390 endpoint	.07¾	.08¼	.08½	.09	.08½	.09
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.05⅝	.05½	.05⅝		.05½	.05⅝
Grade AA, 80-87.9, 375 e.p., rec. 90%	.05½		.05⅜	.05½	.05⅜	.05½
Grade B, 76-83.9, 375 e.p., rec. 85%	.04½		.04⅝		.04½	
Grade BB, 84-92, 375 e.p., rec. 85%	.04½		.04⅜	.04½	.04½	
Grade C, 80-92, 375 e.p., rec. 78%	.04⅜		.04⅜		.04½	

BURNING OIL

OKLAHOMA (Group 3)—	Mar. 11		Mar. 4		Feb. 25	
41-43 water white kerosene	.04	.04¼	.04⅛	.04⅜	.04⅛	.04⅜
41-44 water white kerosene	.04¼	.04½	.04⅜	.04½	.04⅜	.04½
NORTH TEXAS—						
41-43 water white kerosene	.03⅞	.04⅛	.04	.04⅛	.04	.04⅛
40-42 water white kerosene	.04		.04		.04	
***NORTH LOUISIANA—**						
41-43 water white kerosene	.05	.05⅛	.05	.05⅛	.05	.05⅛
***ARKANSAS—**						
41-43 water white kerosene	.05	.05⅛	.05	.05⅛	.05	.05⅛
PENNSYLVANIA—						
43 Kerosene prime white	.05¾		.05¾		.05½	.05¾
45 Kerosene water white	.06		.06		.05¾	.06
46 Kerosene water white	.06¼	.06½	.06¼	.06½	.06	.06¼
47 Kerosene water white	.06½	.06¾	.06½	.06¾	.06¼	.06½
300 Mineral Seal	.07	.07¼	.07¼		.07	.07¼
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.04½	.05	.05	.05½	.05	.05½
Engine distillate, 43-44, 445 endpoint	.06½	.07	.07	.07½	.07	.07½
Engine distillate, 42-44, 480 endpoint	.06	.06½	.06¾	.07¼	.06¾	.07¼
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.04⅛	.04⅜	.04⅛	.04⅜	.04⅛	.04⅜
42-44 water white kerosene	.04¼	.04¾	.04¼	.04¾	.04¼	.04¾
GULF COAST (Export)—						
41-43 prime white	.06		.06		.07	
41-43 water white	.07		.07		.08	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

OKLAHOMA (Group 3)—	Mar. 11		Mar. 4		Feb. 25	
Below 18 Fuel Oil, per bbl.	.67½	.72½	.70	.75	.70	.75
18-22 Fuel Oil, per bbl.	.70	.75	.75	.80	.75	.80
20-22 Fuel Oil, per bbl.	.72½	.77½	.75	.85	.75	.85
22-26 Fuel Oil, per bbl.	.75	.80	.80	.85	.80	.85
24-26 Fuel Oil, per bbl.	.80	.85	.80	.90	.80	.90
26-30 Fuel Oil, per bbl.	.82½	.87½	.85	.90	.85	.95
28-30 Fuel Oil, per bbl. (industrial)	.97½	1.05	1.05	1.10	1.05	1.10
32-36 Gas Oil (industrial)	.02½		.02½	.02¾	.02½	.02¾
32-36 Gas Oil (straw color)	.02⅝	.02⅞	.02⅞	.03⅛	.02⅞	.03⅛
36-38 Distillate	.03		.03	.03¼	.03	.03¼
38-40 Straw Distillate	.03	.03¼	.03⅛	.03½	.03⅛	.03½
NORTH TEXAS—						
Below 20 Fuel Oil, per bbl.	.57½	.62½	.60	.65	.60	.65
24-26 Fuel Oil, per bbl.	.77½	.80	.80	.90	.80	.90
32-36 Gas Oil (straw)	.02⅜	.02½	.02¾	.02⅝	.02½	.02¾
38-40 Straw Distillate	.03		.02⅞	.03⅛	.03	.03⅛
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.85		.85	.90	.85	.90
30-32 Gas Oil	.03	.03⅛	.03	.03⅛	.03	.03⅛
***ARKANSAS—**						
33-36 Distillate	.03	.03¼	.03	.03¼	.03⅛	.03¼
30-32 Gas Oil	.02⅞	.03⅛	.02⅞	.03⅛	.03	.03⅛
16-22 Refinery Fuel Oil, per bbl.	.85	.90	.85	.90	.85	.90
GULF COAST (South Texas)—						
Gas Oil	.03¾	.04	.03¾	.04	.03¾	.04
Bunker C Fuel (cargo lots), per bbl.	.65	.70	.65	.70	.65	.70
Bunker C Fuel (small lots)	.95	1.00	.95	1.00	.95	1.00
PENNSYLVANIA—						
30-34 Fuel Oil	.04¾		.04¾		.04½	.04¾
36-40 Fuel Oil	.04¾	.05	.04¾	.05	.04¾	
CALIFORNIA—						
33-36 Distillate	.03	.03½	.03½	.04	.03½	.04
26-32 Distillate	.02	.02½	.02	.02½	.02	.02½
15-20 Fuel Oil, Bunker (at tidewater)	.70	.80	.70	.80	.70	.80
15-20 Fuel Oil (cargo lots), per bbl.	.60	.75	.60	.75	.60	.75
27 plus Diesel, per bbl.	.90	1.05	.90	1.05	.90	1.05
CHICAGO DISTRICT (Based on Group 3)—						
22-26 Fuel Oil, per bbl.	.80	.85	.82½	.87½	.85	.90
18-22 Fuel Oil, per bbl.	.70	.75	.70	.80	.75	.80
28-30 Fuel Oil, per bbl.	1.05	1.10	1.05	1.15	1.07½	1.12½
32-36 Gas Oil (zero)	.02⅞	.03	.03	.03¼	.02⅞	.03¼
32-36 Gas Oil (industrial)	.02⅜		.02½	.02⅝	.02½	.02⅝
36-38 Distillate	.03	.03⅛	.03	.03⅛	.03	.03⅛
38-40 Straw Distillate	.03⅛	.03¼	.03⅛	.03⅜	.03¼	.03⅜

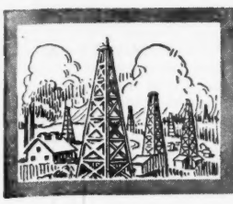
*Louisiana, Arkansas, Mississippi and East Texas delivery.

LUBRICATING OIL AND WAX

OKLAHOMA (Group 3)—	Mar. 11		Mar. 4		Feb. 25	
100 vis., 2 color, 20-25 cold test	.06	.07	.06¾	.07	.06¾	.07
100 vis., 3 color, 20-25 cold test	.05½	.06	.05¾	.06	.05¾	.06
150 vis., 3 color, 20-25 cold test	.08	.08½	.08¼	.08½	.08¼	.08½
150 vis., 4 color, 20-25 cold test	.07¾	.08	.07¾	.08	.07¾	.08
180 vis., 3 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
180 vis., 4 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09¼	.09½
180 vis., 5 color, 23-28 cold test	.09	.09¼	.09	.09¼	.09	.09¼
200 vis., 3 color, 23-28 cold test	.11½	.12	.10¾	.11	.10¾	.11
200 vis., 4 color, 23-28 cold test	.11	.11¼	.10¼	.10½	.10¼	.10½
200 vis., 5 color, 23-28 cold test	.10¼	.10½	.09¾	.10	.09¾	.10
240 vis., 3 color, 25-30 cold test	.14¼	.14½	.14¼	.14½	.14¼	.14½
240 vis., 4 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 5 color, 25-30 cold test	.12¾	.13	.12¾	.13	.12¾	.13
280 vis., 3 color, 25-30 cold test	.16	.16½	.16¾	.17	.16¾	.17
280 vis., 4 color, 35-30 cold test	.15¼	.15½	.15¾	.16	.15¾	.16
280 vis., 5 color, 25-30 cold test	.14½	.14¾	.14¾	.15	.14¾	.15
Cylinder Stocks:						
600, steam refined, light green	.09	.11	.10	.12	.10	.12
600, steam refined, dark green	.08	.10	.09	.11	.09	.11
190-200 vis., D color Bright Stock	.41	.42	.41	.42	.41	.42
150-160 vis., D color Bright Stock	.37		.37		.37	
150-160 vis., E color Bright Stock	.32	.35	.32	.35	.32	.35
Waxes:						
124-126 White Crude Scale Wax	.02½	.02⅝	.02½	.02⅝	.02½	.02⅝
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07¾		.07½	.07¾
34 Sundebloom	.07¾		.07¾		.07½	.07¾
36 Miners' Neutral	.07½		.07½		.07¼	.07½
150, 3 color	.16	.16½	.16	.17	.15½	.16
180, 3 color	.21½	.22	.22		.21½	.22
200, 3 color	.25½	.26	.25½	.26	.25	.25½
220, 3 color	.28½	.30	.29	.30	.29½	.30
600, steam refined	.24	.24½	.24		.22½	.23
635, steam refined	.27½	.29½	.28	.29½	.28½	.29
650, steam refined	.30	.31	.30	.31	.29½	.30
600, Pennsylvania Flash	.32	.33	.31	.33	.30½	.31
630, Pennsylvania Flash	.35	.37	.35		.34½	.35
600, E filtered	.29	.30	.29	.30	.28½	.30
600, D filtered	.35		.35		.34½	.35
Pennsylvania Bright Stocks	.40	.41	.40	.42	.40	.40½
*122-124 White Crude Scale Wax	.03		.03		.02⅞	.03
124-126 White Crude Scale Wax	.03⅛		.03⅛		.03	.03⅛

*At New York.

GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.06½	.06¾	.06½	.06¾	.06½	.06¾
No. 3 color, 200 vis., pale oil	.09¼	.09½	.09¼	.09½	.09¼	.09½
No. 3 color, 300 vis., pale oil	.10¾		.10¾		.10¾	
No. 3½ color, 500 vis., pale oil	.11½	.12	.11½	.12	.11½	.12
No. 4 color, 750 vis., pale oil	.13¼	.13½	.13¼	.13½	.13¼	.13½
No. 5 color, 1200 vis., pale oil	.16		.16		.16	
No. 5 to 6 color, 1200 vis., pale oil	.15		.15		.15	
No. 5 to 6 color, 200 vis., red oil	.08½	.08¾	.08½	.08¾	.08½	.08¾
No. 5 to 6 color, 300 vis., red oil	.09½	.10	.09½	.10	.09½	.10
No. 5 to 6 color, 500 vis., red oil	.10¾	.11¼	.10¾	.11¼	.10¾	.11¼
No. 5 to 6 color, 750 vis., red oil	.12¾		.12¾		.12¾	
No. 2½ color, 200 vis., pale filtered	.11	.12	.11	.12	.11	.12



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

No. 2½ color, 300 vis., pale filtered	.12	.13	.12	.13	.12	.13
No. 2½ color, 500 vis., pale filtered	.14½	.15	.14½	.15	.14½	.15
No. 2½-3 color, 750 vis., pale filtered	.17	.19	.17	.19	.17	.19
CALIFORNIA—						
130 vis., 2½-3 color	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 2½-3 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
300 vis., 3-3½ color	.13	.13½	.13	.13½	.13	.13½
350 vis., 3½-4 color	.13½	.13¾	.13½	.13¾	.13½	.13¾
400 vis., 3½-4 color	.15	.15½	.15	.15½	.15	.15½
Red Neutral:						
200 vis., 4½-5 color	.11	.11¼	.11	.11¼	.11	.11¼
300 vis., 5-6 color	.12	.12¼	.12	.12¼	.12	.12¼
400 vis., 5-6 color	.13¼	.14	.13¼	.14	.13¼	.14
500 vis., 4½-5 color	.14¼	.15½	.14¼	.15½	.14¼	.15½
500 vis, 5-6½ color	.15	.15¼	.15	.15¼	.15	.15¼
600 vis., 6½ plus color	.16	.16¼	.16	.16¼	.16	.16¼

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Mar. 11		Mar. 4		Feb. 25	
Gasoline, U. S. Motor, 58-60, 437	.08¼	.08½	.08¼	.08½	.08½	
Kerosene, water white, 41-43	.07¾		.07¾		.07¾	
*Fuel Oil, Bunker "C," 14-16, per bbl.	1.05		1.05		1.05	
†Fuel Oil, Diesel, 28-30, per bbl.	2.00		2.00		2.00	
Gas Oil, 32-36 gravity	.04¾	.05¼	.04¾	.05¼	.04¾	.05¼
25 pale Paraffin Oil	.10½		.10½		.10½	
28 pale Paraffin Oil	.07¼		.07¼		.07¼	
285 red Paraffin Oil	.12½		.12½		.12½	
250 red Paraffin Oil	.11½		.11½		.11½	
225 red Paraffin Oil	.10		.10		.10	
200 red Paraffin Oil	.09¼		.09¼		.09¼	
Refined Wax:						
120-122 a.m.p., per lb.	.03⅝		.03⅝		.03⅞	
125-127 a.m.p., per lb.	.03⅞		.03⅞		.04¼	
130-132 a.m.p., per lb.	.04⅝		.04⅝		.04⅝	
133-135 a.m.p., per lb.	.05½		.05½		.05⅝	
135-137 a.m.p., per lb.	.05¾		.05¾		.05¾	
Petrolatum in barrels, in carload lots, per pound:						
Dark Green	.01⅞		.01⅞		.01⅞	
Amber	.03⅜		.03⅜		.03⅜	
Extra Amber	.03½		.03½		.03½	
Cream	.06⅜		.06⅜		.06⅜	
Lily White	.06½		.06½		.06½	
Snow White	.08⅜		.08⅜		.08⅜	

*Lighterage 5.0 cents a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Mar. 11		Mar. 4		Feb. 25	
Kerosene, prime white	.07¾		.07¾		.07¾	
Kerosene, water white	.09		.09		.09	
600, steam refined cylinder stocks, in bbls.	.30	.31	.30	.31	.30	.31
635, steam refined	.32	.33	.32	.33	.32	.33
650, steam refined	.36	.37	.36	.37	.36	.37
600, Pennsylvania Flash	.40		.40		.40	
630, Pennsylvania Flash	.43		.43		.43	
600, Warren E	.39½		.39½		.39½	
600, Oil City E	.38½		.38½		.38½	
Light 140-150 Bright Stocks	.48½	.49	.49½	.50	.49¼	.50
Dark 140-150 Bright Stocks	.47½	.48	.48½	.49	.48½	.49

LOS ANGELES EXPORT PRICES

	Mar. 11		Mar. 4		Feb. 25	
Kerosene, water white	.04	.04½	.04½	.05	.04½	.05
*U. S. Motor Gasoline, 53-55, 437 e.p.	.06¼	.06¾	.06¼	.06¾	.06¼	.06¾

*Prices on coastwise shipments.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Oklahoma City—Same as other Mid-Continent price schedule except Empire Pipe Line Co. posts all oil 40 gravity and above at $1.33 on February 15, 1930.
Corsicana heavy (Jan. 16, 1930)*.....$ .70
Other fields.....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties—See gravity table.

WEST TEXAS

Iatan*.....Same as North Texas
Crane-Upton-Crockett, Pecos, Winkler and Mitchell.....See gravity table, column 3
Howard and Glasscock .....See gravity table, column 11
Chalk† .....$ .65

*Includes Westbrook Field.
†Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover, below 24 gravity (May 20, 1929) .....$ .85
Smackover, 24 gravity and above (May 20, 1929) 1.00
Cotton Valley, below 36 gravity (Jan. 17, 1930) ..... .80
Bellevue (Jan. 17, 1930) 1.05
Urania (Jan. 16, 1930) ..... .85
East El Dorado (May 22, 1929) ..... .85
Other fields.....See gravity table

Cotton Valley crude about 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.

Note—Smackover, Cotton Valley and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania Grade A (Jan. 15, 1930)*.....$1.05 posted by Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co.

GULF COAST

Grade B.....See gravity table
Jennings, La. (Jan. 15, 1930)† 1.00
Refugio (Jan. 20, 1930)‡..... .55
Sorrento (Jan. 15, 1930)‡ 1.00
Markham (Jan. 15, 1930)§..... .75
High Island (Jan. 15, 1930)¶..... .85

*Humble Oil & Refining Co. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. §The Texas Pipe Line Co. ¶Posted by Gulf Coast Pipe Line Co.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.
(Effective Feb. 15, 1930)

Rock Creek, Wyo. $1.25
Salt Creek .....See gravity table
Big Muddy $1.33
Grass Creek, heavy (July 27, 1928) .. .90
Grass Creek, light 1.45
Mule Creek (May 21, 1929) 1.20
Elk Basin 1.45
Lance Creek 1.53
Poison Spider (March 14, 1927)..... 1.00
Notches (March 14, 1927) ..... .65
Rex Lake (February 22) 1.10
Osage (May 21, 1929) 1.65
Lost Soldier (contract, May 22) 1.05
Hamilton Dome (March 14, 1927) .... .85
Pedro (May 21, 1929) 1.25
Greybull (May 21, 1929) 1.65
Four Bear (May 21, 1929) ..... .85
Cat Creek (Montana) (Feb. 15, 1930) .. 1.45
Sunburst (Montana) (Feb. 15, 1930) ... 1.65
Torchlight (May 21, 1929) 1.65
Hogback (New Mexico) (May 21, 1929) 1.70
Artesia (New Mexico) (Feb. 15, 1930).. 1.00

Note—Salt Creek, Osage, Cat Creek, Grey-

(Continued on Page 202)

CRUDE OIL GRAVITY TABLE

Gravity—	1 Okla., Kans., N. C. Texas	2 No. La. and Arkansas	3 Crane, Upton, Crockett, Winkler, Pecos, Mitchell, (West Texas) Lea, N. Mex.	4 Stephens, Ark.	5 Wheeler (Texas Panhandle)	6 Gray County (Texas Panhandle)	7 Carson and Hutchinson (Texas Panhandle)	8 Salt Creek, Wyo.	9 Grade B and Light Crude (G. Coast)	10 Somerset (South Central Texas)	11 Howard and Glasscock, W. Tex.
24 and above.	....	....	....	....	....	....	....	....	....	....	....
Below 24	....	....	....	....	....	....	....	....	....	....	....
Below 25	.60	....	.55	....	....	....	....	....	.90	....	.58
25 to 25.9	.66	....	.58	....	....	....	....	....	.93	....	.59
26 to 26.9	.72	....	.61	....	....	....	....	....	.96	....	.61
27 to 27.9	.78	....	.64	....	....	....	....	....	.99	....	.64
Below 28	....	.78	....	.90	.70	.69	.72	....	....	....	....
28 to 28.9	.84	.84	.67	.94	.70	.69	.72	....	1.02	....	.66
29 to 29.9	.90	.90	.70	.98	.70	.75	.72	.90	1.05	....	.68
30 to 30.9	.96	.96	.73	1.02	.76	.81	.72	.96	1.08	....	.70
31 to 31.9	1.02	1.02	.76	1.06	.82	.87	.72	1.02	1.11	....	.72
32 to 32.9	1.08	1.08	.79	1.10	.88	.93	.78	1.08	1.14	1.05	.74
33 to 33.9	1.11	1.11	.82	....	.91	.96	.81	1.11	1.17	1.07	.76
34 to 34.9	1.14	1.14	.85	....	.94	.99	.84	1.14	1.20	1.09	.78
35 to 35.9	1.17	1.17	.88	....	.97	1.02	.87	1.17	1.23	1.11	.80
36 to 36.9	1.20	1.20	.91	....	1.00	1.05	.90	1.20	....	1.13	.82
37 to 37.9	1.23	1.23	....	....	1.03	1.08	.93	1.23	....	1.15	....
38 to 38.9	1.26	1.26	....	....	1.06	1.11	.96	....	....	1.17	....
39 to 39.9	1.29	1.29	....	....	1.09	1.14	.99	....	....	....	....
40 to 40.9	1.32	1.32	....	....	1.12	1.17	1.02	....	....	....	....
41 to 41.9	1.35	1.35	....	....	1.15	1.20	1.05	....	....	....	....
42 to 42.9	1.38	1.38	....	....	1.18	1.23	1.08	....	....	....	....
43 to 43.9	1.41	1.41	....	....	1.21	1.26	1.11	....	....	....	....
44 and above.	1.44	1.44	....	....	1.24	1.29	1.14	....	....	....	....

Column 1, Note—Above prices posted by Prairie Oil & Gas Co. on February 15, 1930, by Sinclair Oil & Gas Co. February 13, 1930. On January 15, 1930, Humble Oil & Refining Co. posted North Central Texas crude at following prices: Below 25 gravity 60 cents; a 6-cent differential added per degree to 32-32.9 gravity at $1.08 and a 3-cent differential above making 44 gravity and above at $1.44. The Carter Oil Co. posted this schedule for Oklahoma and Kansas, January 16. Same date Magnolia posted these prices in North Central Texas. On January 17, Magnolia posted the schedule for Oklahoma and Kansas.

North Central Texas—Includes Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Nocona and Moran Pools.

Column 2—Arkansas and North Louisiana—(Caddo, Bull Bayou, Crichton, Cotton Valley above 36 gravity, DeSoto, Haynesville, Homer and El Dorado only). Texas Pipe Line Co., January 15, 1930. Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Pipe Line Co., Magnolia Petroleum Co., January 16, 1930.

Column 3—Humble Oil & Refining Co., January 15, 1930, and Magnolia Petroleum Co. January 16, 1930.

Column 4—Atlantic Oil Producing Co. and Louisiana Oil Refining Corp., May 21, 1929.

Columns 5, 6 and 7—Humble Oil & Refining Co., January 15, 1930, and Magnolia Petroleum Co., January 16, 1930. Adopted by Prairie Oil & Gas Co., February 15.

Column 8—Midwest Refining Co., February 15, 1930. All crude over 37 gravity $1.23 per barrel.

Column 9—Humble Oil & Refining Co., January 15, 1930 (schedule ends 35 and above).

Column 10—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

Column 11—Humble Oil & Refining Co., January 15, 1930, Magnolia posted Howard-Glasscock crude same schedule as West Texas, January 16, 1930.

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective January 18, 1929)

Gravity—	1 Salt Lake, Newport, Summerland, Lawndale, Los Angeles, Fullerton, Richfield, Torrance, Olinda-Brea, Alamitos Heights, Huntington Beach, Signal Hill (Nov. 8)	2 Whittier, La Habra, Coyote Hills	3 Midway-Sunset, Elk Hills, Lost Hills, Beiridge, Buena Vista Hills	4 Montebello	5 Santa Fe Springs (Nov. 8)	6 Santa Maria, Coalinga	7 Wheeler Ridge, Fruitvale	8 Orcutt, Ventura, Rincon	9 Ventura Ave., (Nov. 8)	10 Elwood Terrace	11 Seal Beach (Nov. 4)
14 to 14.9	.70	.70	.50	.70	..	.50	.50	.55	.70	....	.70
15 to 15.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....	.70
16 to 16.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....	.70
17 to 17.9	.70	.70	.50	.70	....	.50	.50	.65	.70	....	.70
18 to 18.9	.75	.75	.56	.70	....	.56	.56	.70	.75	....	.75
19 to 19.9	.80	.80	.62	.75	....	.62	.62	.70	.80	....	.80
20 to 20.9	.85	.84	.68	.80	....	.68	.68	.70	.85	....	.85
21 to 21.9	.89	.88	.74	.85	.89	.74	.74	.86	.86	....	.89
22 to 22.9	.93	.91	.80	.90	.92	.80	.80	.87	.87	....	.93
23 to 23.9	.97	.94	.85	.95	.95	.85	.85	.90	.90	....	.97
24 to 24.9	1.01	.97	.90	.98	.98	.88	.88	.94	.94	....	1.01
25 to 25.9	1.05	1.00	.95	1.01	1.01	.91	.91	.98	.98	....	1.05
26 to 26.9	1.09	1.04	1.00	1.04	1.04	.94	.94	1.02	1.02	....	1.09
27 to 27.9	1.13	1.08	1.05	1.07	1.07	.98	.97	....	1.06	....	1.13
28 to 28.9	1.17	1.12	1.10	1.10	1.10	1.02	....	....	1.10	....	1.17
29 to 29.9	1.21	1.16	1.16	1.13	1.15	1.06	....	....	1.14	....	1.21
30 to 30.9	1.25	1.20	1.22	1.16	1.20	1.10	....	....	1.18	....	1.25
31 to 31.9	1.30	....	1.28	....	1.25	1.14	....	....	1.23	....	1.30
32 to 32.9	1.35	....	1.34	....	1.30	1.18	....	....	1.28	....	1.35
33 to 33.9	1.41	....	1.40	....	1.35	1.22	....	....	1.34	....	....
34 to 34.9	1.47	....	1.46	....	1.40	1.26	....	....	1.40	1.16	....
35 to 35.9	1.53	....	....	....	1.45	1.30	....	....	1.46	1.22	....
36 to 36.9	1.59	....	....	....	1.50	....	....	....	1.52	1.28	....
37 to 37.9	1.65	....	....	....	1.55	....	....	....	1.58	1.34	....
38 to 38.9	1.71	....	....	....	1.60	....	....	....	1.64	1.40	....
39 to 39.9	1.77	....	....	....	1.65	....	....	....	1.70	1.46	....
40 to 40.9	1.83	....	....	....	....	....	....	....	1.76	1.52	....
41 to 41.9	1.89	....	....	....	....	....	....	....	1.82	1.58	....
42 to 42.9	1.95	....	....	....	....	....	....	....	1.88	1.64	....

Kern River, Newhall-McKittrick, Mount Poso and Round Mountain 11 to 13.9 gravity 45 cents, 14 gravity and above 50 cents, effective October 2, 1929. On December 1, 1928, the Union Oil Co. posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11 to 13.9 gravity at 45 cents; 14 gravity and above 50 cents.

Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity; Dominguez and Athens-Rosecrans, 24 to 42.9 gravity.

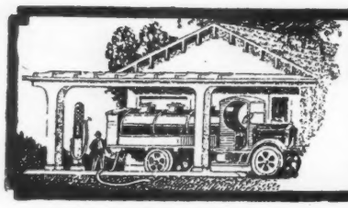
Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 3—Kern River, Newhall and McKittrick, 11 to 19.9 gravity; Midwest-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity posted at 45 cents.

Column 6—Oil below 14 gravity posted at 45 cents.

Columns 8 and 9—Posted by Union Oil Co. only.

Kettleman Hills, 55 gravity and above, $1.65 (posted by Standard Oil Co. of California).



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Mar. 11

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago†	17.0	18.0	3.0	13.0
Decatur, Ill.	17.2	18.2	3.0	13.1
E. St. Louis	16.4	17.4	3.0	12.2
Joliet	17.4	18.4	3.0	13.3
Peoria	17.2	18.2	3.0	13.1
Quincy	17.2	18.2	3.0	12.9
Davenport, Ia.	17.5	18.5	3.0	13.3
Des Moines	17.5	18.5	3.0	13.3
Keokuk	17.5	18.5	3.0	13.3
Sioux City	17.1	18.1	3.0	12.9
Duluth, Minn.	18.5	19.5	3.0	13.9
Mankato	18.1	19.1	3.0	13.7
Minneapolis	18.2	19.2	3.0	13.9
LaCrosse, Wis.	17.2	18.2	2.0	14.0
Milwaukee	16.1	17.1	2.0	12.9
Madison	16.3	17.3	2.0	13.1
Detroit, Mich.	17.8	18.8	3.0	14.7
Grand Rapids	17.7	18.7	3.0	14.6
Saginaw	17.9	18.9	3.0	14.8
Evansville, Ind.	18.0	19.0	4.0	14.0
Fort Wayne	18.4	19.4	4.0	14.4
Indianapolis	18.2	19.2	4.0	14.2
South Bend	18.4	19.4	4.0	14.4
Fargo, N. D.	19.9	20.9	3.0	15.9
Huron, S. D.	19.3	20.3	4.0	14.7
Sioux Falls	18.1	19.1	4.0	14.4
K. C., Mo.*	16.9	17.9	3.0	11.6
Springfield*	16.8	17.8	3.0	12.5
St. Louis*	15.9	16.9	2.5	12.3
St. Joseph	16.5	17.5	2.0	12.2
Wichita, Kans.	15.8	14.8	3.0	11.8
Bartlesville, Ok.	16.5	17.5	4.0	11.5

*State tax 2 cents; remainder city tax.

†Effective February 20, discounts on Q.D.A. in Chicago district 2 cents off service station price on purchases of 500 gallons or more per month and 4 cents on purchases of 1,000 gallons or more per month.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline; 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents; 100,000 gallons or more 4½ cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	14.7	12.9
V. M. & P. Naphtha	16.7	13.9
Cleaner's naphtha	17.0	14.9
Stanisol	17.0	15.4

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 349 gallons	8.0
350 gallons or more	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	16 0	20 0	4.0	12.0
Fort Worth	16.0	19 0	4.0	12.0
Houston	15.0	19.0	4.0	11.0
San Antonio	15.0	19.0	4.0	11.0
El Paso	16.0	20.0	4.0	14.0
Texarkana	17.0	19.0	4.0	12.0
Muskogee*	14.0	16.0	4.0	10.0
Okla. City*	15.0	18.0	4.0	10.0
Tulsa*	15.0	19.0	4.0	10.0
Ft. Smith, Ark.	14.0	16.0	5.0	12.0
Little Rock	18.0	18.0	5.0	13.0

*Gasoline tank wagon price to dealers 2 cents under posted tank wagon.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	18.0	21.0	4.0	15.5
Pueblo	18.0	21.0	4.0	15.5
Grand Junction	22.0	25.0	4.0	19.0
Casper, Wyo.	18.0	21.0	4.0	14.0
Cheyenne	19.5	22.5	4.0	15.5
Butte, Mont.	23.5	26.5	5.0	20.0
Helena	23.5	26.5	5.0	20.0
Salt Lake, Utah	20.0	23.0	3.5	17.0
Albu'que, N. M.	20.0	22.0	5.0	17.0
Boise, Idaho	22.5	25.5	4.0	19.0
Twin Falls	22.5	25.5	4.0	19.0

PENNSYLVANIA—DELAWARE AND PART NEW ENGLAND

The Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	15.0	*21.0	...	13.0
Philadelphia	15.0	*21.0	...	13.0
Scranton	15.0	*21.0	...	13.0
Allentown	15.0	*21.0	...	13.0
Altoona	15.0	*21.0	...	13.0
Erie	15.0	*19.0	...	13.0
Dover, Del.	18.0	20.0	3.0	13.0
Wilmington	18.0	20.0	3.0	13.0
Springf'd, Mass.	16.5	18.5	2.0	13.5
Worcester	16.3	18.3	2.0	13.3
Boston	15.5	17.5	2.0	12.5
Providence, R.I.	15.7	17.7	2.0	12.7
Hartford, Conn.	15.5	17.5	2.0	13.5
New Haven	15.6	17.6	2.0	13.6

*Includes tax of 4.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State. The Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. The Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	15.6	17.6	2.0	14.6
New York*	14.3	16.3	2.0	13.3
Buffalo	15.8	17.8	2.0	13.8
Rochester	16.0	18.0	2.0	13.0
Syracuse	16.8	18.8	2.0	13.8
Boston, Mass.	14.5	16.5	2.0	12.5
Augusta, Me.	17.8	19.8	4.0	13.8
Manch't'r, N. H.	17.4	19.4	4.0	13.4
Burlington, Vt.	17.6	19.6	4.0	14.3

*Prices in steel barrels.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	20.0	21.0	4.0	15.5
Augusta	21.0	23.0	4.0	15.5
Macon	21.0	23.0	4.0	15.5
Savannah	20.0	22.0	4.0	14.0
Birm'ham, Ala.	20.0	22.0	5.0	14.5
Mobile	19.0	21.0	4.0	13.5
Montgomery	20.0	22.0	4.0	15.0
Clarks'le, Miss.	18.0	20.0	5.0	12.5
Jackson	19.0	21.0	5.0	13.0
Natchez	18.5	20.5	5.0	13.0
Gulfport	20.5	22.5	5.0	13.0
Vicksburg	18.5	20.5	5.0	13.0
Jack'ville, Fla.	20.0	22.0	6.0	14.0
Miami	21.0	23.0	6.0	14.0
Pensacola	18.0	20.0	6.0	13.5
Tampa	20.0	22.0	5.0	13.0
Lexington, Ky.	18.0	20.0	5.0	14.5
Covington	19.0	20.0	5.0	14.5
Louisville	19.0	21.0	5.0	13.0
Ashland	20.0	21.0	5.0	15.0
Catlettsburg	20.0	21.0	5.0	15.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. Pensacola, Birmingham and Mobile taxes include 1-cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlantic City	16.5	18.5	2.0	13.5
Newark, N. J.	15.5	17.5	2.0	12.5
Annapolis, Md.	18.0	20.0	4.0	13.0
Baltimore	17.2	19.2	4.0	10.5
Cumberland	19.0	21.0	4.0	14.0
Washington	15.7	17.7	2.0	12.7
Danville, Va.	19.8	21.8	5.0	13.8
Norfolk	18.3	20 3	5.0	11.0
Petersburg	19.3	21.3	5.0	13.3
Roanoke	20.0	22.0	5.0	14.0
Richmond	18.7	20.7	5.0	12.7
Charles'n, W.Va.	18.5	20.5	4.0	12.5
Keyser	19.1	21.1	4.0	14.1
Parkersburg	17.2	19.2	4.0	11.2
Wheeling	18.4	20.4	4.0	12.4
Charlotte, N. C.	20.3	22.0	5.0	14.3
Hickory	20.8	22.8	5.0	14.8
Mt. Airy	20.5	22.5	5.0	14.5
Salisbury	20.7	22.7	5.0	14.7
Charleston, S.C.	19.3	21.3	6.0	12.3
Columbia	21.2	23.2	6.0	14.2

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
San Francisco	20.0	23.0	3.0	15.5
Los Angeles	19.5	22.5	3.0	15.5
Reno, Nev.	25.0	28.0	4.0	19.0
Portland, Ore.	25.5	23.5	3.0	16.5
Seattle, Wash.	19.5	22.5	3.0	16.5
Tacoma	20.5	23.5	3.0	16.5
Spokane	23.5	26.5	3.0	20.5
Phoenix, Ariz.	18.0	22.0	4.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where discount is 1 cent.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	18.25	20.25	4.0	13.25
McCook	19.75	21.75	4.0	14.75
Norfolk	18.75	20.75	4.0	13.75
N. Platte	19.75	21.75	4.0	14.50
Scottsbluff	19.75	21.75	4.0	14.25

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points*	18.0	19.0	4.0	†12.0

*Dealers and commercial accounts 2 cents under tank wagon.

†Service station price 14 cents.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.*	15.0	15.0	5.0	12.0
Baton Rouge	15.0	15.0	4.0	14.0
Alexandria	16.0	18.0	5.0	14.0
Lafayette†	17.0	19.0	5.0	14.0
Lake Charles†	16.0	18.0	5.0	14.0
Shreveport	15.0	17.0	4.0	14.0
Knoxv'le, Tenn.	19.0	21.0	5.0	16.0
Memphis	17.0	19.0	5.0	12.5
Chattanooga	19.0	21.0	5.0	16.0
Nashville	18.0	20.0	5.0	16.0
Bristol	19.0	20.0	5.0	14.0
Lt. Rock, Ark.	16.0	18.0	5.0	13.0

*Tax of 5 cents includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.

†Includes 1-cent parish tax.

TANK WAGON CHANGES

Standard Oil Co. of New York reduced the gasoline tank wagon and station prices 1 cent in Massachusetts, Rhode Island, Maine and New Hampshire March 6.

Standard Oil Co. of Louisiana reduced the gasoline station price 1 cent in Little Rock, Ark., to 16 cents on March 4.

Magnolia Petroleum Co. reduced the gasoline tank wagon and station prices 1 cent in Fort Smith, Ark., February 25, and reduced the station price 2 cents in Little Rock, Ark., on February 28.

Standard Oil Co. of Kentucky advanced the gasoline tank wagon and station prices 1 cent in Birmingham, Ala., to equalize the 1 cent city tax which became effective March 1.

SHELL TO TEST NEAR ST. LOUIS

ST. LOUIS, Mo., Mar. 10.—The Shell Petroleum Corp. has leased approximately 5,000 acres of land in St. Charles County. The land is located between the Mississippi and Missouri Rivers near their junction. The land may be tested for possible oil or gas.

GULF COAST MARKETS

HOUSTON, Tex., Mar. 11.—Although there has been no change in market prices of Gulf Coast pale and red oils for several weeks, the increased business the past two weeks has indicated a stronger tone. Sellers generally report more business so far during March than for either January or February.

The low price of crude and the comparatively low market on pale and red oils together with the seasonal demand for material to meet increased spring requirements are the chief factors in the present situation. Other products indicated very little change during the week. Gasolines were unsteady, being quoted around 6½ to 7 cents f.o.b. refineries for local movement. Fuel and gas oils were firm with little available for spot movement because of the growing demand for cracking stock on the part of the refiners themselves who are cracking a large part of their own production of fuel and gas oils.

CRUDE OIL PRICES

(Continued from Page 201)

bull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

Darst Creek (Jan. 15, 1930)*	$1.05
Luling (Jan. 15, 1930)*	.75
Mirando (Jan. 15, 1930)†	.75
Salt Flat (Jan. 15, 1930)‡	1.05
Rockdale Minerva (April 15):	
Below 28 gravity	1.25
28-38.9 gravity	1.27
39-39.9 gravity	1.29
40 and above	1.31
Thrall‡	...
Callihan (May 15)	1.75
Lytton Springs (Lockhart)	See gravity table
Somerset	See gravity table

*Posted by Magnolia Petroleum Co.

†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.

‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight.

§Humble Oil & Refining Co.

EASTERN STATES

Joseph Seep Purchasing Agency

(Effective Feb. 17, 1930)

Penna Grade Oil in New York Transit Lines (New York)	$2.80
Bradford District Oil in National Transit Lines (Pennsylvania)	2.80
Penna Grade Oil in National Transit Lines (Pennsylvania)	2.80
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	2.75
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	2.65
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.45
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 22, 1929)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Line (Feb. 17, 1930)	1.55
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s lines (Feb. 17, 1930)	1.65
Somerset Oil in Cumberland Pipe Line Lines (Kentucky) (Feb. 17, 1930)	1.37
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (Jan. 29)	.60
Wayne district oil in Cumberland Pipe Lines (Feb. 17, 1930)	1.24

*Oil run prior to July 1, 1929, $2.95.

MIDDLE WESTERN STATES

Ohio Oil Co.

(Effective Feb. 15, 1930)

Lima	$1.65
Wooster	1.75
Illinois	1.60
Indiana	1.42
Princeton	1.60
Plymouth	1.18
Waterloo (November 17, 1926)	1.35
Western Kentucky	1.50
Dundee, Mich. (Feb. 13, 1930)‖	..... Same as Mid-Continent gravity scale
Upper and Lower Traverse sands, Mich.‖	..... Same as Mid-Continent gravity scale
Midland, Mich. (Feb. 6, 1930)*	1.25
Saginaw, Mich., Saginaw sand (February 10)†	1.89
Saginaw, Mich., Berea sand (February 10)†	1.79
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 16)‡	1.50
Oil in line in Stoll Oil Refinery Co. in Oil City, Ky. (Feb. 19, 1930)§	1.45
Oil Springs (Canada) (Feb. 15, 1930)¶	2.12
Petrolia (Canada) (Feb. 15, 1930)¶	2.15

*Posted by Pure Oil Co.

†Posted by Sun Oil Co.

‡Posted by Paragon Development Co.

§Posted by Stoll Oil Refining Co.

¶Posted by Imperial Oil Co., Ltd.

‖Posted by Standard of Indiana for boat shipment.

MEXICAN CRUDE

Panuco*	$ .67

*Based on February transactions.

Marketing methods have changed, too! *Sell* SINCLAIR THREE-GAS SERVICE

There are today so many different types of engines—and so many different driving conditions in traffic and in the open—that one kind of gasoline today cannot be *exactly right* for *all* cars, and for *all* needs. It takes *three* different gasolines to meet all motoring demands, and wise motorists will buy their gas where they can *choose* from these three and get superior engine performance—give your trade these three and build increased gallonage.

Here's *Sinclair Aircraft Gasoline*, the *Ace* of high test gasolines, for the motorist who wants quick getaway, flashy acceleration and brilliant road performance. Sinclair Aircraft is the Ace of high test gasolines because it is specially manufactured at Sinclair Refineries, meeting the requirements of the Federal Specifications Board for Aviation Gasoline—domestic grade—and gives sustained power. Due to its careful fractionation it is free from dissolved gases which cause gas locks, uneven distribution, galloping and engine balk.

Here's *Sinclair H-C Gasoline* for those who want high compression performance—*who want to stop knocks and keep them stopped*—all gasoline, nothing added!

And here's *Sinclair Regular Gasoline* for those who prefer to pay three cents less per gallon and yet get gas that is full of eager power. The quality gasoline at a popular price! Sell Sinclair Three-Gas Service—get the jump on competition and earn a jump in gallonage.

SINCLAIR REFINING COMPANY, INC., 45 Nassau Street, New York—*Atlanta, Chicago, Houston, Kansas City*

Indiana Co. Will Add 2,000,000 Shares

To Be Used in Acquiring Property or Other Corporate Purposes. Annual Report of Atlantic Refining Co.

At the annual meeting of stockholders of the Standard Oil Co. of Indiana at Whiting, Ind., directors were re-elected as follows: Edward G. Seubert, Allan Jackson, Robert H. McElroy, Edward J. Bullock, Amos Ball, Robert E. Humphreys, Charles J. Barkdull, Gentry Cash, Melvin A. Traylor and Bruce Johnstone. For administrative reasons T. S. Cooke was not re-elected. Mr. Cooke is a director in the Pan-American Petroleum & Transport Co. and vice president in charge of its manufacturing activities, to which he desires to devote his entire attention. His place on the board was filled through election of A. W. Peake who recently resigned the presidency of the Dixie Oil Co. to organize a production department for the Indiana company.

The stockholders approved the proposed increase of authorized capital stock from 18,000,000 to 20,000,000 shares, the additional shares to be used in acquiring property or for other corporate purposes. They also approved the change in date of the annual meeting from the first Thursday in March to the first Thursday in May to allow time in which consolidated financial statistics of the company and all its subsidiaries and associated companies can be prepared. The time between the close of the calendar year and the first Thursday in March has proved to be too short for this statistical work.

At the meeting of the new board of directors immediately following the stockholders' meeting officers for the ensuing year were elected as follows: Edward G. Seubert, president; Allan Jackson, Robert H. McElroy, Edward J. Bullock, Robert E. Humphreys and A. W. Peake, vice presidents; Charles J. Barkdull, vice president and treasurer; Felix T. Graham, secretary; Ralph E. Clarke, assistant secretary and assistant treasurer; William C. Ewald, assistant secretary; William D. Roberts, assistant treasurer. Mr. Peake is the only new officer, all others being re-elected.

President Seubert's Report

In his annual statement President Seubert said:

The earnings for the year 1929 included an extra cash dividend from the Midwest Refining Co. of $3,118,065, whereas in 1928 an extra cash dividend of $21,821,870 was received from that company, a decreased revenue from that source of $18,703,805. Notwithstanding, the net earnings before taxes, of the Standard Oil Co. of Indiana were $85,099,754 for 1929, compared with $83,437,166 in 1928, an increase of $1,662,588. The net earnings after a reserve for taxes of $6,600,000 were $78,499,754 for 1929 as compared with $77,337,166 in 1928, an increase of $1,162,588.

Eliminating the extra cash dividends received from the subsidiary companies there was a substantial increase in net earnings from operations which is due to increased realization on sales of petroleum products, decreased manufacturing cost and marketing cost per barrel, and a greater volume of sales in 1929. The sales department in 1929 marketed 39,017,894 bbls. compared with 35,432,806 bbls. in 1928. There was also a substantial increase in administrative income due to investment of surplus cash funds in government securities, etc.

The company's net earnings for the year amount to $5.37 a share on the average number of shares outstanding during the year, compared with $8.33 a share the previous year. This decrease in earnings a share is due to a 50 per cent stock dividend paid in February, 1929, and additional shares issued during the year in exchange of stock in subsidiary companies. This represents a profit of 12.10 per cent on capital invested, duly depreciated, which at the close of 1929 business was $648,590,435, compared with $461,462,304 at the end of 1928. The total assets of $697,034,463 includes the company's investment in subsidiary and affiliated corporations in the amount of $336,165,434 which is carried on the books at cost.

The company ended the year with a surplus of $71,181,152 compared with $156,476,947 at the close of 1928, a decrease of $85,295,795. Adjustments of surplus in prior years reduced the surplus at the end of 1928 in the amount of $80,575. As dividends were paid from earnings, after payment of these and provision for Federal taxes there was a surplus from 1929 earnings of $31,016,899. In addition a 50 per cent stock dividend in the amount of $116,232,119 was paid, making a total decrease to surplus of $85,295,795 as stated. Cash

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended March 5 Sales	Week ended March 5 High	Week ended March 5 Low	Week ended March 5 Close	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
21⅞	18	6,000	18½	18	18	Amerada Corp.	(sh)	922,075	N.P.	50cQ	1-31-30	37⅝	27⅝	43⅞	27½	42⅝	17½
27⅞	20½	10,600	27⅞	25	26⅜	American Republics Corp.	(sh)	209,180	N.P.	.....	3-20-29	82⅛	35⅛	85	51⅜	64¾	12½
37⅜	32½	60	33⅛	33	33⅛	Associated Oil		$57,260,300	$25	50cQ	12-31-29	50¼	35	53⅜	37½	47¼	34½
42⅞	36¼	20,000	41⅜	39⅞	40⅛	Atlantic Refining		$50,000,000	$25	25cQ	12-16-29	131⅜	104	66⅜	50	77⅞	30
24¼	20½	18,800	23⅜	22¼	22⅝	Barnsdall Corp.		$45,235,650	$25	50cQ	12- 7-29	35½	20¾	53	20	49⅛	20
23⅞	19½	7,700	22	21⅛	21⅛	Continental Oil of Delaware	(sh)	4,741,554	N.P.	.....	3-31-27	..	..	..	..	47⅛	18
60⅜	49¼	13,400	60⅜	57¾	58½	General Asphalt		$20,785,400	N.P.	50cQ	.....	96¾	65	94⅞	68	94¾	42¼
81½	52¼	25,700	81½	76¼	78	Houston Oil		$25,000,000	$100	.....	.....	175¾	60⅛	167	79	109	26
23¾	20¼	8,500	23¾	22½	22⅞	Independent Oil & Gas	(sh)	1,333,572	N.P.	50cQ	1-31-30	32¾	17⅝	38⅜	21¾	39⅜	17¾
22⅜	17¾	4,700	21¼	20⅛	20½	Indian Refining		$12,307,370	$10	.....	5-31-24	12⅛	7⅝	39⅝	9	53	13⅛
22¼	21¼	100	22¼	22⅛	22⅛	Lago Oil & Transport	(sh)	3,992,122	N.P.	.....	5- 1-27	37¾	20½	39⅛	27⅜	38⅜	16½
9½	8	700	8⅝	8⅝	8⅝	Louisiana Oil Refining	(sh)	1,190,063	N.P.	.....	.....	18⅛	10	19¾	9⅜	18	7
7½	5½	1,500	7½	5¾	7⅜	Maracaibo Oil	(sh)	330,000	N.P.	.....	.....	22¾	12	25½	12½	18½	5⅛
22⅝	...	22,800	22⅜	21¼	21½	Mexican Seaboard	(sh)	1,276,873	N.P.	.....	12-15-20	9¼	3	73	4⅝	69⅜	9¼
28	23½	2,400	26⅜	25⅝	26⅛	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	50cQ	12-15-29	39⅜	25½	44½	25⅛	39⅞	22⅛
..	..	No sales.				Middle States, ctfs.		$24,298,850	$10	.....	7- 1-23	3¾	1⅝	7⅜	2⅜	5⅛	¾
60⅛	51⅜	300	53	53	53	Pan American P. & T.		$50,084,700	$50	.....	10-20-27	65⅞	40⅛	54⅞	38¼	69	40½
60¼	50½	1,400	54	52¾	53	Pan American P. & T. "B"		$121,105,050	$50	.....	11-15-24	66⅜	40¼	58⅞	37¾	69¼	40½
..	..	No sales.				Pan American Western B§		400,000	N.P.	.....	1-30-27	37⅞	16¾	28⅜	15½	18½	13⅝
5⅜	4⅛	500	4¾	4¾	4¾	Panhandle P. & R.	(sh)	199,370	N.P.	.....	.....	18⅞	8	21¾	11½	15¼	3
50⅛	47½	100	50⅛	50⅛	50⅛	Panhandle P. & R. pfd.		$2,564,400	$100	.....	7- 2-23	83	54	108	70	76	47½
36¾	29⅛	12,400	35¾	35	35½	Phillips Petroleum	(sh)	2,406,796	N.P.	50cQ	1- 2-30	60¼	36¼	53⅞	35¼	47	24¼
1⅜	1	300	1⅜	1¼	1⅜	Pierce Oil Corp.		$29,622,831	$25	.....	.....	1⅛	½	5¼	½	3⅜	1
3½	2¼	4,300	3½	3⅛	3½	Pierce Petroleum	(sh)	2,500,000	N.P.	.....	.....	5½	2½	7	3½	5⅞	½
52¼	46	2,700	47	46	46	Prairie Oil & Gas		$61,720,125	$25	50cQ*	12-31-29	55½	45⅝	68	46	65⅝	40½
60	55⅝	1,600	56⅞	55⅝	55⅝	Prairie Pipe Line		$101,250,000	$25	75cQ†	12-31-29	190	130¾	280	172	65	45
9½	6½	1,300	8¼	7⅞	8¼	Producers & Refiners		$37,438,950	$50	.....	9-15-23	33⅞	16¾	29⅞	16	25⅞	4
31	34					Producers & Refiners pfd. ‖		$2,845,350	$50	.....	5- 1-25	50	36⅞	49⅝	41	46⅜	25½
24⅜	21⅛	20,400	23⅜	22⅛	22¾	Pure Oil		$75,959,250	$25	37½cQ	12- 2-29	33½	25	31⅝	19	30¾	20
26½	22¼	2,800	26	25⅜	25⅜	Richfield Oil		$47,964,650	$25	50cQ	11-15-29	28⅝	25⅜	56	23	49⅝	20
19¾	16½	7,300	19¾	19⅛	19¼	Rio Grande Oil	(sh)	1,200,000	N.P.	$2.00A	7-25-29	..	..	37½	32	42½	15
54⅝	49¼	4,200	51⅛	50¼	50½	Royal Dutch, N. Y.	(sh)	611,303	$1.873	.....	9-13-29	54½	44¼	64	44⅝	64	43⅛
42⅜	43½					Shell Transport & Trading Co. ‖		£19.654,274	£1	$1.45	7-23-29	48⅝	40½	47⅞	41⅜	57½	40⅝
23⅝	21	4,500	22¼	22	22	Shell Union Oil	(sh)	13,000,000	N.P.	35cQ	12-31-29	31¾	24⅝	39¼	23¼	31¾	19
28¼	22⅞	200	25½	25	25½	Simms Petroleum		$8,060,380	$10	40cQ	12-14-29	25⅜	14¼	27¼	18⅛	40⅛	15
25⅞	21⅝	22,800	25⅜	24¾	25	Sinclair Consolidated	(sh)	5,500,000	N.P.	50cQ	1-15-30	22⅜	15	46¾	17⅜	45	21
111	109	100	109½	109½	109½	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	11-15-29	104½	97	110	102½	111	103
32¼	28⅞	800	30¾	30½	30½	Skelly Oil		$27,237,750	$25	50cQ	12-16-29	37⅜	24⅛	42⅝	25	40½	28
61⅝	55½	6,800	61¼	59¼	60	Standard Oil of California	(sh)	12,594,098	N.P.	62½cQ	12-16-19	60¾	50⅜	80	53	81⅞	51½
66⅞	58	57,900	63¼	61	62½	Standard Oil of New Jersey		$620,079,800	$25	25cQ*	12-16-29	41⅜	35⅛	59⅜	37¾	83	48
33⅞	31¼	6,600	32⅞	32⅜	32¾	Standard Oil of New York		$434,094,575	$25	40cQ	12-16-29	34⅛	29¾	44¼	28¾	48⅛	31¾
59⅜	53	1,400	57	55½	57	Sun Oil	(sh)	1,297,627	N.P.	25cQ	12-16-29	34⅞	30	77	31½	86⅜	55
7⅜	5¼	5,500	6⅞	5⅞	6⅜	Superior Oil Corp.	(sh)	2,324,938	N.P.	.....	12-20-20	..	..	..	..	24	5¼
56¼	50⅞	7,900	54¼	53	53⅜	The Texas Corporation		$211,076,650	$25	75cQ	1- 1-30	58	45	74⅜	50	71⅞	50
10⅜	9	1,700	10	9⅝	9⅝	Texas Pacific Coal & Oil Co.		$8,380,340	$10	2½%A‡	12-31-29	18⅞	12	26⅝	12⅛	23⅞	9½
21⅞	19½	300	21	19½	21	Tide Water Oil	(sh)	2,191,759	N.P.	20cQ	12-31-29	29⅛	19	41½	19⅝	40	14
90	86½	300	87½	86½	87½	Tide Water 5½% pfd.		$20,705,200	$100	$1.25Q	11-15-29	90½	85	100⅛	86	97½	85⅛
13¼	10¾	4,100	12	11¾	11⅞	Tide Water Associated	(sh)	4,796,158	N.P.	30c8	2-15-30	19⅛	15¾	25	14¾	23½	10
84	78	700	79	79	79	Tide Water Associated pfd.		$72,844,300	...	$1.50Q	2- 2-30	..	..	..	..	90⅞	74⅛
10⅛	7¾	24,700	8¾	8	8¼	Transcontinental Oil	(sh)	3,742,029	N.P.	.....	.....	10⅜	3¾	14¾	7¼	15¼	5⅛
46¼	41⅛	200	43½	43	43½	Union Oil of California		$94,798,100	$25	50cQ	11- 9-29	56½	39⅝	58	42⅜	57	42⅛
36¼	33	800	33	33	33	Union Tank Car		$31,061,200	$100	$1.25Q	12- 2-29	127½	94	128⅛	110	163¾	121⅞
20⅞	16⅝	3,900	17¼	17	17	Warner-Quinlan	(sh)	356,000	N.P.	50cQ	1- 2-30	34½	24½	44⅞	26	42⅞	15
28⅛	26	300	28	27½	28	White Eagle Oil & Refining	(sh)	490,000	N.P.	50cQ	1-20-30	27½	20	38	20⅛	38	25
15	11½	300	13	13	13	Wilcox Oil & Gas	(sh)	2,400,000	N.P.	.....	5-10-28	..	..	..	..	29¾	12⅞

*Plus extra dividend of 25 cents. †Plus extra dividend of 50 cents. ‡Payable in stock. §Stocks not sold since January 1, 1930. ‖ Bid and ask. x Ex-dividend.
In comparing highs and lows for the several years in the three tables it will be necessary to take into consideration cases where there have been splits in the stock.

dividends paid during 1929 amounted to $47,482,855 against $32,416,528 in 1928, at the rate of $3.25 a share during 1929 against $3.50 a share in 1928, but payment was made on a material increased number of shares due to stock dividend and shares issued in exchange for stock in subsidiary companies, the shares outstanding December 31, 1929, numbering 16,850,587 as compared with 9,284,688 a year ago.

The value of working supplies, crude oil and manufactured petroleum products on hand is $53,088,756 as compared with $54,489,277 in 1928. On the other hand, the company is carrying in cash, government securities and investments, outside of investments in other companies, a total of $122,692,245 compared with $114,927,406 a year ago, an increase of $7,764,839. This reserve in cash and securities is the largest in the history of the company and places it in a position where it will be able to cope with any unfavorable contingencies which may arise, or to take immediate advantage of any opportunities arising in the industry.

The Midwest Refining Co., of whose stock the company owns 99.93 per cent, had earnings after Federal taxes of $9,388,179 in 1929 compared with $5,743,670, after taxes, in 1928. This increased profit is due principally to a more constant crude price, increased volume of sales, and a generally higher realization on all products.

The Dixie Oil Co. owned 100 per cent by the Indiana company, sustained a net loss of $1,313,926 mainly due to decrease in production occasioned by proration of production under the general conservation measures and heavy expense developing properties.

During 1929 the Indiana company acquired additional stock in Pan American Petroleum & Transport Co. and now owns in excess of 81 per cent of all stock outstanding. Preliminary reports from this company and its subsidiaries indicate that the earnings for 1929 will approximate earnings of 1928.

The Sinclair Pipe Line Co., in which the Indiana company has a 50 per cent interest, had net earnings after Federal taxes of $9,420,757 against $8,388,285 in 1928, due to increased runs through gathering and trunk lines.

Atlantic Refining

Atlantic Refining Co. expended nearly $19,000,000 in the acquisition of physical properties of various kinds during 1929, which was the best year in the company's history, says J. W. Van Dyke, chairman of the board, in his annual report.

"Earnings for 1929," says Mr. Van Dyke, "were the largest in the history of the company, and while differing but slightly from 1928 earnings, they were nearly twice as great per dollar of invested capital as was the average experience for the years 1924-1928, inclusive.

(Continued on Page 208)

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended March 5 Sales	High	Low	Close	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
¼	⅛	1,100	3/16	⅛	3/16	Amer. Con. Oilfields		$11,018,000	$5	.....	.....	2 7/16	.55	1½	.53	72c	⅜
3¼	1½	400	2	2	2	Amer. Maracaibo	(sh)	700,000	N.P.	.....	.....	7½	2¾	9½	3⅛	8⅝	1⅛
1⅜	1¼	100	1¼	1¼	1¼	Argo Oil	(sh)	683,971	$10	.....	.....	2¾	1	4½	2¼	5	1½
..	..	No sales.				British Americans§		1,311,321	N.P.	25cQ•	1- 2-30	40	20½	55	32¾	62	7⅞
2⅛	¾	2,600	2⅛	1⅝	1⅝	Carib. Syndicate		$131,250	25c	.....	.....	28¼	15½	4½	3⅞	4⅞	1
39⅝	26½	220,200	39⅝	37½	37½	Cities Service	(sh)	24,290,359	N.P.	30cA†	1- 2-30	58¾	40¼	90⅞	54	68⅛	20
89⅞	88	1,400	89¼	88¾	88⅞	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	1- 2-30	95⅜	87	103½	94½	98¾	84
⅜	¼	400	⅜	⅜	⅜	Colombia Syndicate		$2,000,000	$1	.....	.....	3⅞	1⅛	3¼	.76	2	½
5⅞	4¼	100	4¼	4¼	4¼	Cons. Royalty		$5,000,000	$10	15cQ	10-25-29	9¾	6⅜	8⅞	6¼	11⅛	2½
6⅝	5⅝	3,800	6	5¾	6	Creole Petroleum	(sh)	5,977,873	N.P.	.....	.....	14⅞	9½	17½	9½	11⅜	5⅝
1	⅜	500	1	1	1	Crown Central	(sh)	578,000	N.P.	.....	.....	3	.50	3¼	.76	2½	¼
8¾	7¼	400	8	8	8	Darby Petroleum	(sh)	1,019,392	N.P.	25cQ	1-15-30	12	4	33½	3¼	26	6½
5⅜	4⅝	1,400	4⅝	4½	4½	Derby Oil & Refining	(sh)	500,000	N.P.	.....	.....	2½	74	2¼	1	11	2
..	..	No sales.				Derby Oil & Refining pfd.§		48,500	N.P.	.....	.....	16¾	4	21⅛	7½	44	20¾
144	131¼	1,800	139	136	138	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	1- 1-30	118	86¼	165	101⅛	209	115
1½	¾	1,300	⅞	¾	⅞	Intercontinental Pet.		$5,682,000	$5	.....	.....	2½	.80	3⅜	1	2⅞	⅜
2½	1⅞	100	2¼	2¼	2¼	Kirby Petroleum	(sh)	750,000	N.P.	.....	.....	2¼	1⅛	3	1¼	3⅝	1¼
2¼	1¼	700	2⅛	2	2	Leonard Oil & Dev.		$50,000,000	$25	.....	.....	10⅞	5⅛	9⅜	5⅛	6⅛	1
22	18⅝	200	20	20	20	Lion Oil & Refining	(sh)	250,000	N.P.	50cQ	1-31-30	27½	20	43⅞	20	38⅞	18
39⅞	34⅛	400	39	38⅜	38⅜	Lone Star Gas	(sh)	5,000,000	N.P.	20cQ	12-31-29	59⅜	37	69⅛	48½	67⅞	28
5/16	¼	300	¼	¼	¼	Magdalena Syndicate	(sh)	850,000	$1	.....	.....	2⅞	.80	1⅞	.50	1¼	⅛
..	..	No sales.				Margay Oil§		160,000	N.P.	50cQ	1-10-30	52	12	48½	32	38½	14
3½	2	300	2½	2½	2½	Mexico-Ohio Oil		.....	...	.....	.....	12⅛	5	8	2¾	6⅜	2½
⅝	½	200	⅝	⅝	⅝	Mountain & Gulf		$4,000,000	$1	2cQ	1-15-30	1½	1	1¾	.76	1½	¼
9⅜	8	500	8⅝	8½	8½	Mountain Producers		$1,682,182	$10	40cQ	1- 2-30	29¼	22¾	28⅞	19½	22⅞	7
2⅞	2½	100	2⅝	2⅝	2⅝	New Bradford Oil		$1,095,291	$5	12½cQ	1-15-30	5⅞	4⅝	5⅝	4¼	5	2¼
7¼	3½	300	6½	6½	6½	New Mex. & Arizona		$1,000,000	$1	.....	.....	16	9¼	11⅞	7⅛	9⅜	2¼
8½	6⅞	100	8	8	8	North Central Texas	(sh)	400,000	N.P.	15cQ	12- 2-29	12⅜	9½	14¼	8½	18½	6⅛
2¼	1	3,100	2¼	2⅛	2¼	Pandem	(sh)	489,875	N.P.	.....	.....	9⅜	3¼	6	2⅛	3½	⅛
4	1⅞	200	3⅛	2¾	2¾	Pantapec Oil	(sh)	1,506,600	N.P.	.....	.....	12⅛	7	15⅝	8½	10¼	1⅞
..	..	No sales.				Pennok Oil§		150,000	N.P.	.. ...	.....	13½	5⅛	7¾	4⅞	7¾	4⅝
10	9	400	9	9	9	Red Bank Oil	(sh)	250,000	N.P.	.....	.....	24⅜	7	18	4⅞	16	9⅝
3	2¼	100	2¼	2¼	2¼	Reiter-Foster	(sh)	388,584	N.P.	10cQ	12- 2-29	15½	3½	12⅞	4⅛	8½	1⅛
4⅜	3⅝	100	4¼	4¼	4¼	Ryan Consolidated	(sh)	500,000	N.P.	.....	.....	7	4½	12	4⅛	11	3
2⅜	2	300	2	2	2	Salt Creek Consolidated	(sh)	1,286,300	$10	10cQ	1- 2-30	8	5¼	7¼	5½	5⅞	1⅞
12⅜	10	100	11¾	11¾	11¾	Salt Creek Producers	(sh)	1,496,859	$10	50cQ	2- 1-30	35½	27¼	35	23⅛	25⅞	9
..	..	No sales.				Savoy Oil§		$750,000	$5	.....	.....	7	1¼	3½	1	2½	5/16
19½	16	400	16¾	16½	16¾	Transcontinental pfd.		.....	...	.....	.....	..	..	..	..	..	..
4¼	2¼	700	3½	3¼	3½	Venezuelan Petroleum	(sh)	755,090	$5	5cQ	11-15-29	7⅜	4¼	9⅛	4¾	6½	1¾
3	2¼	200	2¼	2¼	2¼	Woodley Petroleum		$500,000	$1	.....	.....	7	4¾	8¼	4⅞	9½	2
1⅞	½	200	⅞	⅞	⅞	Y Oil & Gas (new)§		100,000	N.P.	.....	.....	6	1¾	8⅜	2⅛	2⅞	¼

•Including one-half per cent monthly in stock. x Ex-dividend. †Payable monthly and a monthly stock dividend of one-half per cent. ‡Cents per share.
§Stocks have not sold since January 1, 1930.

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended March 5 Sales	High	Low	Close	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
17⅝	15	100	15½	15½	15½	Anglo-American Oil (nv)	£4,192,635	£1	.36⅔	11-27-29	21⅝	17⅞	22⅜	14⅞	17	11
¾	¾	400	¾	¾	¾	Atlantic Lobos	.....	...	.....	.....	..	..	..	..	..	..
..	..	No sales.				Borne Scrymser§	$1,000,000	$25	$1S.A.	10-15-29	69	50	56½	44½	46½	25
..	..	No sales.				Buckeye Pipe Line	$10,000,000	$50	$1Q	12-14-29	60	45	76	53	74¼	55
..	..	No sales.				Chesebrough Mfg.	$3,000,000	$25	$1Q•	12-30-29	126	76½	161	117	210	130
15⅞	12⅛	300	12½	12⅛	12¼	Continental Oil	$36,057,840	$10	.....	12-15-27	22⅝	16¼	23	16	29	10
..	..	No sales.				Cumberland Pipe Line	$1,500,000	$50	$1Q	12-15-29	137	89	114	67	75¾	40
..	..	No sales.				Eureka Pipe Line§	$5,000,000	$100	$1Q	11- 1-29	68½	47	88	64⅛	70½	42
3½	3	200	3⅛	3⅛	3⅛	Galena Signal Oil ctfs of dep.	$16,000,000	$100	.....	.....	13½	3½	13	4¼	6½	3
93	78	4,900	93	86½	90¼	Humble Oil & Refining	$74,103,300	$25	50cQ	1- 1-30	68½	54	114¾	59¼	128	74⅛
311	305	150	311	309¾	311	Illinois Pipe Line	$20,000,000	$100	$10S.A.	12-16-29	182	123¾	290½	176½	340½	260
27⅜	22⅛	2,800	24½	23⅝	24¼	Imperial Oil Co., Ltd.	26,421,768	N.P.	12½cQ	12- 2-29	64¾	37¾	104	56¾	41	22
41	38⅝	200	39⅞	39⅞	39⅞	Indiana Pipe Line	$3,000,000	$10	50cQ‡	2-15-30	94½	61	91⅞	74⅜	41⅞	26
21⅞	17⅞	2,000	20	19¼	19⅜	International Pet.	14,247,088	N.P.	12½cQ	12-16-29	29	28¼	55	35	30⅜	15
22⅜	20	200	20⅛	20	20	National Transit	$6,362,500	$12.50	25cQ‡	12-16-29	24	13½	32⅜	19⅜	25⅛	10½
18¼	17⅝	100	17⅝	17⅝	17⅝	New York Transit§	$1,000,000	$10	40cQ§	1-15-30	44½	31¼	75	38½	17½	10
54	47¾	300	49¾	49¾	49¾	Northern Pipe Line	$2,000,000	$50	$2S.A.	1- 2-30	100	70	69	56½	63	41
71¼	66⅛	300	69¼	69	69¼	Ohio Oil	$60,000,000	$25	50cQ‡	12-14-29	67⅞	52	84	58½	79⅞	64⅛
22½	20	100	20½	20½	20½	Penn Mex. Fuel	$10,000,000	$25	50cQ	12-14-29	39	12	84	28	44½	20
33	28	100	28	28	28	Solar Refining	$4,000,000	$25	$1.25S.A.	12-20-29	..	..	..	..	50	29
16¾	13	300	15	14	15	Southern Pipe Line	$1,000,000	$10	50cQ	.....	27¼	15½	19	15	22½	13
41⅝	37½	2,800	41⅝	39½	39⅝	South Penn Oil (new)	$30,000,000	$25	50cQ	12-30-29	41½	35	71⅞	36¾	60¼	35⅛
..	..	No sales.				Southwest Pa. Pipe Lines	$1,750,000	$50	$1Q	10- 1-29	83	55½	102	70	70	60
54⅝	49⅞	10,100	52¼	51¼	51⅞	Standard Oil of Indiana	$348,175,069	$25	62½cQ‡	12-16-29	81½	64⅝	95⅞	70⅞	63	45
30	27⅛	400	28⅞	28¼	28⅞	Standard Oil of Kansas	$8,000,000	$25	50cQ	12-16-29	20⅞	14⅝	37¾	15	33¾	18
37⅛	33¼	2,900	35⅞	35¼	35¼	Standard Oil of Kentucky	$25,654,516	$10	40cQ	12-16-29	130	111½	179¾	122¼	46⅞	29
48¼	44¼	100	47½	47½	47½	Standard Oil of Nebraska	$4,649,225	$25	62½cQ‡	12-20-29	49½	40	54⅞	39⅞	50¼	40
88⅜	81	150	86	84½	84½	Standard Oil of Ohio	$14,000,000	$25	62½cQ	1- 2-30	87½	72	134	71	129	60
..	..	No sales.				Swan-Finch Co.	$861,466	$25	.....	12- 2-29	21	14½	23½	16	18	10
96⅞	88⅛	800	91⅞	91⅛	91¼	Vacuum Oil Co.	$126,180,350	$25	$1Q	12-20-29	..	..	111	72	133¾	75

Note—High and low on all stocks selling this week are for 1930.
•Plus 50 cents extra. †Stocks not sold since January 1, 1930. ‡Plus 25 cents extra. §Plus 10 cents extra. x Ex-dividend.

WEAKNESS IN EASTERN REFINED OIL MARKET

(Continued from Page 195)

Refiners are rather optimistic regarding the near future outlook in export markets. The contemplated refinery curtailment program, it is expected, will develop substantial improvement in the statistical position of the industry, and will enable the liquidation of excess stocks of products now held at refineries. These refinery holdings, it is conceded, have been an important factor in creating the bearish views which foreign buyers hold toward the American refined products market. Some interests are of belief that actual starting of the curtailment activities at refineries will bring considerable immediate shipment business into the export market, with foreign buyers stocking ahead in anticipation of higher prices.

Petroleum Exports

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Mar. 1	Feb. 22	Feb. 15
Gasoline	280,000	77,000	450,000
Naphtha	1,665,000	3,650,000	710,000
Kerosene	127,000	730,000	6,000
Fuel oil	35,000	300,000	8,000
Lubricating oil	1,272,000	680,000	2,615,000
Petroleum, refined	3,015,000	415,000	855,000
	Pounds		
Petrolatum	184,000	21,000	30,000
Paraffin wax	2,040,000	1,650,000	366,000
Refined	560,000	18,000	459,000
Scale	1,435,000	488,000	117,000
Lubricating grease	875,000	554,000	660,000

There were two cargo shipments of refined petroleum products during the week, one of 1,100,000 gallons on the Forthbank and another of 900,000 gallons on the Greystoke Castle, both for Chinese ports.

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended March 1 totaled 2,001,000 bbls., a daily average of 285,857 bbls., compared with 2,364,000 bbls., a daily average of 337,714 bbls. for the previous week and a daily average of 278,750 bbls. for the four weeks ended March 1. Details follow:

	Bbls. of 42 Gals.
At Atlantic Coast Ports—	
Baltimore	69,000
Boston	69,000
New York	1,179,000
Philadelphia	250,000
Others	378,000
Total	1,945,000
Daily average	277,857
At Gulf Coast Ports—	
New Orleans & Baton Rouge	15,000
Port Arthur & Sabine district	26,000
Tampa	15,000
Total	56,000
Daily average	8,000
At Atlantic and Gulf Coast Ports—	
Total	2,001,000
Daily average	285,857
Daily average four weeks	278,750

While separate statistics on weekly gasoline imports are not available, it is reported that gasoline imports are showing a steady increase over 1929 totals, with the outlook favoring further growth in motor fuel imports at South Atlantic ports, and possibly at the Gulf.

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended March 1 totaled 175,000 bbls., a daily average of 25,000 bbls., compared with 212,000 bbls., a daily average of 30,286 bbls. for the week ended February 22 and a daily average of 52,786 bbls. for the four weeks ended March 1. Details follow:

	Bbls. of 42 Gals.
At Atlantic Coast Ports—	
New York	145,000
Daily average	20,714
At Gulf Coast Ports—	
Total	30,000
Daily average	4,286
At Atlantic and Gulf Coast Ports—	
Total	175,000
Daily average	25,000
Daily average four weeks	52,786

Distribution of total California oil receipts is as follows:

Gasoline	105,000
Gas oil	70,000

CONSUMPTION GOOD IN CHICAGO OVER WEEKEND

(Continued from Page 194)

lower than a week ago. Sellers are seeking business and trying to make acceptable bids, turning down any possible orders reluctantly, no matter how low the proffered price. There is some short selling, of course, where the order is for delivery over a period of a month or more. What is claimed by the sellers is a good 18-22 fuel oil with a zero pour test has been sold at 62½ cents and probably at 60 cents in a private way. One of the local refiners who usually gets a top price because of prompt deliveries and low freights is asking 75 cents for its 18-22 against 80 cents a week ago and 85 cents a month back. Other quotations have suffered accordingly. Of course all of the oil sold at low prices is not full specification or is full of settlings or has some drawback but really good 28-30 zero fuel oil is now selling on occasions to large users at less than $1 a barrel and the gravity has been offered at 90 cents a barrel, but unfortunately the seller could not convince the buyer that the oil would take the place of the material previously used. It is a very uncertain market with the demand for heating oils practically over for the season and the demand for the industrial oils rather slow to develop.

Lubricating Stocks

Refiners of lubricating stocks report that their compounder customers are now giving shipping instructions quite freely and that bright stocks, neutrals and steam cylinder stocks are moving from the plants in greater volume. The market for the latter seems to have been fixed at 9 to 10 cents although some steam refined stock has been sold here at 8¾ cents recently. The demand for motor oils is not active. Industrial lubs are moving fairly well.

There have been no changes in the tank wagon list in this territory of a general nature. Some advances to normal have been made at several points. Generally the price situation is as good as it was before the reduction in the tank wagon scale and possibly a little better. The purchase of jobbing concerns by large refining companies continues, several such purchases having been announced during the week, the Cities Service Co. being the purchaser. It is understood they are providing a certain outlet for the new and to-be-enlarged refinery at East Chicago. Generally the jobbing trade is hopeful of a good gasoline season but there is less expansion than a year ago.

CRACKING CALIFORNIA GAS OIL AND FUEL

(Continued from Page 48)

profitable method of operating the cracking process.

From the commercial conversion of an 18° A.P.I. gravity Los Angeles Basin topped crude, yields of over 54 per cent of 400° F. endpoint motor fuel were obtained, having a knock rating of approximately 55 per cent benzol equivalent.

In this mode of operation, the topped crude was pumped into the fractionating tower in order to cool the vapors therein and increase the temperature of the incoming oil. The topped crude mixed with the heavier condensed portions of the cracked vapors flowed into the suction side of a hot oil pump, from which it discharged into the heating coil placed within a furnace, wherein the temperature was raised from approximately 780° F. to about 940° F. as it passed into a reaction chamber. The reaction chamber is heavily insulated. The coke produced during the cracking reaction accumulates in the reaction chamber. The cracked vapors leave the top of the reaction chamber, passing into the bottom of the fractionating tower. From the top of the dephlegmator the cracked vapors flow through a pipe connection into a water-cooled condensing coil, from which the pressure distillate oil passes into a receiver with the uncondensable gas. In order to control the temperature at the top of the dephlegmator so as to produce the quality of cracked distillate desired, a portion of the distillate was recirculated in controlled quantities. The cracked distillate is drawn from the bottom of the receiver, passing into a stabilizer so as to de-gas the distillate in order to produce a stable finished motor fuel after subsequent chemical treatment and re-running of the cracked distillate. The pressure of the cracking system is maintained by permitting controlled quantities of uncondensable gas and cracked distillate to flow from the receiver.

A typical commercial run converted approximately 1,575 bbls. per day per unit of Los Angeles Basin topped crude, from which approximately 73 per cent of pressure distillate was produced. The pressure distillate, after chemical treatment, was distilled into 400° F. endpoint motor fuel and a furnace oil or Diesel oil bottoms.

The following data give the details of the commercial cracking of Los Angeles Basin topped crude by the non-residual oil method:

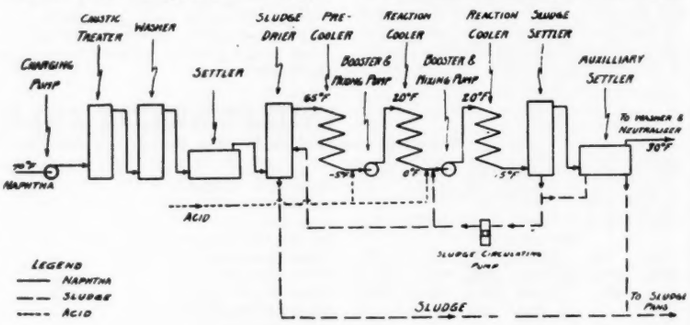
A.P.I. gravity	18.3
Per cent off at 572° F.	13.9
Viscosity Saybolt furol at 122° F.	59 Sec.
Charging oil (bbls. total)	1,589
Charging oil (bbls. per day on stream)	1,173
Pressure distillate (bbls. total)	1,157
A.P.I. gravity	47.5
Per cent of charge	72.9
Coke, gas, stabilizing loss	27.1
Coke (lbs. per bbl. of charge)	94.4
Gasoline (400° F. endpoint), per cent of charge	54.51
A.P.I. gravity	55.9
P. D. Bottoms, per cent of charge	18.36
Temperatures ° F.	
Furnace above tubes	1,450
Furnace below tubes	1,025
Transfer line	940
Vapor to dephlegmator	865
Vapor to condenser	530
Reflux condensate	780
Pressure on receiver (lbs. per sq. in.)	140

The coke produced by the cracking process analyzed approximately as follows:

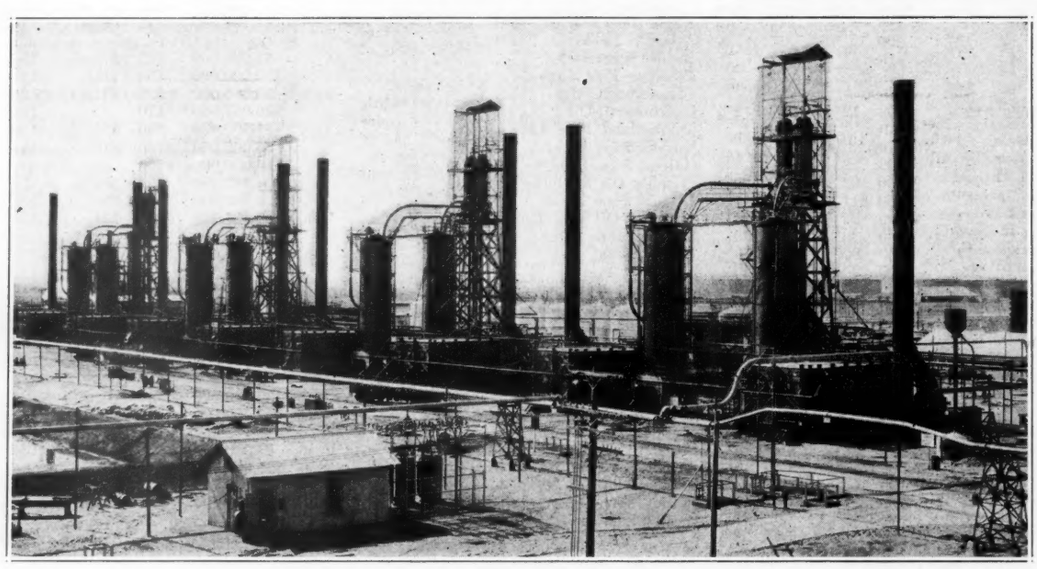
	Per cent by weight
Volatiles	14.2
Fixed carbon	84.7
Ash	0.8
B.T.U.'s per lb.	15,550
Sulphur, per cent	1.3

An ash analysis showed the oxides of the metal iron, silicon, aluminum, calcium, magnesium, and sodium.

The uncondensable gas produced during the operation of the cracking process had a B.t.u. content per cubic foot of approximately 1,400. In the operation of the cracking process when converting



Cold sulphuric acid treating plant.



Front view—eight cracking units.

California gas oils or fuel oils into high yields of gasoline, there is always more than enough gas produced to fuel the cracking process. As a matter of fact, more than enough gas is produced to convert the heavy oils into gasoline and operate parts of the refinery, such as the boiler house, etc.

The above results were obtained in cracking units of 1,800 feet of 4-inch diameter coils and a single 10-foot diameter and 40-foot high reaction chamber. The throughput of topped crude would be doubled by the installation of another reaction chamber.

Stabilization Treatment

The pressure distillate oil produced by the cracking process is stabilized in order to fractionate out the "wild gases," produce a gasoline of low vapor pressure and eliminate pumping troubles. An excellent description and flow chart of a desulphurizer and stabilizer which is commercially used in California was given by A. L. Strout before the last American Petroleum Institute meeting in Chicago and appeared in The Oil and Gas Journal December 5,1929.

Another stabilizing system connected with the cracking process is carried out under approximately 50 pounds pressure. The pressure distillate passes through a heat exchanger and then into a bubble tower. There is a reboiler and a refluxing mechanism connected with the bubble tower so as to control the temperature at the top and bottom of the tower in order to produce a degassed pressure distillate which may be pumped readily and which will yield, after chemical treatment and rerunning, a low vapor pressure gasoline.

The conditions of operating the stabilizing system are such that propane, butane and pentane, if desired, may pass off as gases from the bubble tower and they are then compressed into steel cylinders so that they may be marketed for use as household gas and cutting gas. The degassed pressure distillate passes on to storage and is then chemically treated with sulphuric acid, water, caustic soda and doctor's solution. The chemically treated distillate is then rerun to motor fuel and Diesel or furnace oils by means of steam and fire.

Chemical Treatment

The chemical treatment of stabilized California cracked distillate is being carried out in several ways to produce finished motor fuel.

One highly important commercial method of treating pressure distillate or naphtha is with cold sulphuric acid. R. A. Halloran described this process in an address given before the American Petroleum Institute 1927 meeting held in Chicago. The flow chart and description of the cold sulphuric acid treatment of cracked distillate appeared in the 1927 proceedings of the American Petroleum Institute.

Sulphuric Acid Treatment

Another method of continuously treating cracked California distillate is under normal atmospheric temperature conditions with sulphuric acid.

The stabilized distillate is agitated with a solution of caustic soda. The mixture is allowed to settle in a tank and the caustic soda sludge drawn off. The pressure distillate from this treatment is mixed with sulphuric acid ranging in Baume gravity from 60 to 66 degrees at the rate of 10 pounds more or less of acid per barrel of distillate treated. The amount of acid is dependent upon the degree of desulphurization of the cracked product desired.

The mixture of sulphuric acid and cracked distillate is allowed to settle in a tank and the sludge acid drawn off. There may be several acid sludge settling tanks used dependent upon the time of settling necessary to drop out all of the sludge acid. The caustic soda and acid-treated cracked distillate is then thoroughly water-washed, and then with another solution of caustic soda. The chemically treated cracked distillate is steam and fire distilled into motor fuel and pressure distillate bottoms. The cracked gasoline is given a final doctor treatment. The motor fuel produced is doctor sweet having a 28-30 color and is color stable when subjected to the sun test for a period of four hours.

The pressure distillate bottoms are highly suitable for use as furnace oil, Diesel oil or tractor distillate.

CALIFORNIA URGED TO CO-OPERATE BY REESER

(Continued from Page 50)

ber of failures is an added cost to production? It is admitted that in recent years scientific devices and a very high class of engineering skill have been used in trying to find new deposits of petroleum. Unlimited capital has been available to search for new reserves. The record shows that 10 years ago, in 1919, 20½ per cent of all wells drilled were dry; in 1924, 23 per cent were in that class, and last year the percentage increased to 30 per cent. In California the operators were more fortunate; only 26 per cent of their total operations were dry. It should be noted that this record includes those located in proven areas. It is fair to assume that every operating company has drilled in its most favorable locations. Not only in California, but throughout the entire United States the search has been continuous.

Proportion in Drilling

A statement frequently heard is to the effect that if the major companies really desire to correct the overproduction problem they should reduce their drilling operations. I do not desire to criticize the individual or small company operator—they have been extremely helpful—but a survey of all the drilling wells west of the Mississippi River as of February 15, 1930, shows that major and the larger independent companies representing approximately 80 per cent of the production of the United States were drilling only 34 per cent, whereas individuals and small companies with 20 per cent of the production were engaged in drilling 66 per cent of the wells.

Another interesting situation is found in this, the banner State in many respects: 5,792 wells have been drilled in California during the past five years and yet, at the end of 1929, only 10,515 wells were in the producing list compared with 11,069 five years earlier. In the entire United States, 26,000 wells were drilled in 1929, with only 4,000 added to the producing list.

Santa Fe Springs, Long Beach or Seminole—if any one of them had not been discovered, there would at this time be a shortage of crude oil in the United States.

Why not be selfish? Pursue the curtailment plan a little harder and create a sellers' market for crude oil. If you don't want to be selfish, then, as a good patriotic citizen, help protect the future of this great United States. Secretary Wilbur, in his first annual report recently issued, said: "The time has come when conservation of the nation's oil resources must be regarded as a national strategy."

Two Outstanding Elements

We believe conservation is worth while from any point of view which you desire to take. Producers have recently had to bear the burden of two outstanding elements: The simultaneous development of several great producing areas, an unusual occurrence and one which may not occur again, and during the same period tremendous progress made in refinery practice. Ten years ago, the average gasoline yield from crude oil run to still was 25 per cent, while last year it was 39 per cent, an increase of nearly six gallons from each barrel run.

California, as is usually true, surpassed the average for the United States by more than doubling the yield per barrel within nine years. The last five years show an increase of from 19 per cent to 34 per cent, whereas in 1920 the yield only averaged 14.3 per cent. In other words, production of crude in California increased two and one-half times while production of gasoline increased seven and one-half times, or from 33,000 to 250,000 bbls. per day. Export and domestic consumption increased approximately four times during the same period.

Other areas have contributed to the depressed condition of the gasoline market, but it is apparent that California is the chief offender. It is not probable that such increases will continue, at least not on the present price structure.

Much ground work has been done in the attempt to balance production with consumption. The refiners are making it more difficult because of their efficiency. Let us remind them, however, that for years we were told that the value of crude is based on gasoline. Therefore, with such a substantial increase in the yield, producers have a right to expect to participate in the result. Producers should restrict the output of crude to a point where they receive a fair and proper price for their product.

VOSHELL LIMITED TO 15,000 BARRELS A DAY

New proration plans were adopted for some of the flush pools in Kansas at a meeting held in Wichita, March 10. The Voshell Pool, in McPherson County, all operators agreed to limit the output of the pool to a maximum of 15,000 bbls. a day, which is approximately the present capacity of the pipe lines in the area, and is 75 per cent of the potential production, which is estimated at 20,000 bbls. a day. The plan will remain in effect until April 15, 1930.

The proration agreement in the Valley Center Pool was continued under the present plans which are for 50 per cent of the potential production.

In the Raymond district in Rice County, all producing wells were limited to 50 bbls. each. The Ritz Pool, in McPherson County, was still being prorated 50 per cent of the potential of each well.

The Kansas proration committee was increased from 3 members to 11 members at the same meeting, called by J. Garfield Buell, chairman of the committee. The members are as follows: Rush Greenslade, Gypsy Oil Co.; J. G. Dickinson, independent operator: R. B. Roark, Shell Petroleum Corp.; H. C. Fitzpatrick, Prairie Oil & Gas Co.; F. A. Pielsticker, Skelly Oil Co.; S. J. Polhamus, independent operator; Lee Scott, Vickers Petroleum Co.; G. A. Stearns, Stearns & Streeter; George H Bruce, Aladdin Petroleum Corp.; R. H. Pryor, Slick, Pryor & Lockhart; T. C. Johnson, independent operator and state umpire.

Oklahoma City operators will meet in Tulsa on Monday, March 17, to take action on continuing the curtailment of production in the Oklahoma City Pool and fixing the percentage of potential which the pool will be allowed to produce.

Umpire Ray M. Collins has issued an open letter to Oklahoma producers urging the necessity of curtailment of production throughout the year and recommending that none but necessary wells be drilled until supply and demand balance.

REPORT OF MAGNETIC CHARACTER OF DAYS

Tucson Magnetic Observatory
For the Month of February
Greenwich mean time, midnight to midnight

Day—	Character of day*	Disturbance Begins h	Disturbance Begins m	Disturbance Ends h	Disturbance Ends m
1	0	..	..	..	..
2	1	..	..	..	..
3	1	..	..	..	..
4	0	..	..	..	..
5	0	..	..	..	..
6	0	..	..	..	..
7	0	..	..	..	..
8	0	..	..	..	..
9	0	..	..	..	..
10	0	..	..	..	..
11	0	..	..	..	..
12	2	21	..	..	..
13	2	..	..	..	..
14	2	..	..	..	..
15	2	..	..	..	..
16	1	..	..	..	..
17	1	..	..	..	..
18	1	..	..	..	..
19	0	..	..	..	..
20	0	..	..	..	..
21	0	..	..	..	..
22	0	..	..	..	..
23	0	..	..	..	..
24	1	..	..	..	..
25	1	..	..	..	..
26	0	..	..	..	..
27	0	..	..	..	..
28	2	0	..	..	..

*Quiet, 0; moderately disturbed, 1; severely disturbed, 2.

ADVOCATE CHANGE IN MARKETING CONDITIONS

(Continued from Page 47)

dress will be found elsewhere in this issue.

Mr. Pielsticker's Comment

F. A. Pielsticker led the discussion following Mr. Jones' address. Pointing to the government figures given by Mr. Jones covering the percentage increase in gasoline production in 1929 which showed that California, the Middle West and other refining groups had had a larger increase than the Mid-Continent, particularly Oklahoma and Kansas. Mr. Pielsticker blamed the one price policy previously mentioned as largely responsible for the situation in which Mid-Continent refiners have seen their marketing territory grow smaller and smaller. He pointed to the tanker price plus transportation at seaboard points as indicative of the trend in marketing adopted by the major companies, which was certain to aggravate the already keen competitive price situation.

R. W. McDowell, general sales manager of the Mid-Continent Petroleum Corp., also favored the multiple price suggestion and strongly urged the appointment of a marketing committee which could make an intensive study of the Mid-Continent problems with the view of working out some plan which could be used as the basis in discontinuing present practices. "Instead of being something which everybody shoots at, let's do some shooting ourselves," he declared in advocating a more aggressive and a less defensive position in meeting competitive conditions. He also predicted the spread of the delivered price plan in sales.

M. J. Grogan, of the Louisiana Oil Refining Corp., stated that a group of Arkansas and North Louisiana refiners had adopted this policy over the past year in Arkansas, Louisiana and Mississippi sales and it had proved practicable.

R. R. Irwin, of the White Eagle Oil Corp., advocated a careful consideration of statistics covering supply and demand by consuming areas as the basis for any change in marketing policies which would mean that refinery quoted prices would be different for different territories. He and others stressed the desirability of a price leadership in tank car markets comparable to that which exists in most areas in tank wagon and service station prices. Although no substitute was offered the use of trade journal quotations as the basis for contracts was condemned.

Specifications and Prices

P. M. Miskell, of the Empire Oil & Refining Co., led the discussion on the relation of changes in gasoline specifications and prices. He pointed to the adoption of U. S. Motor gasoline specifications a few years ago by the Government taking the place of 450 endpoint gasoline bringing smaller yields from a barrel of crude oil as indicating what might be expected in the present trend of selling low endpoint gasoline at U. S. Motor prices. He advocated the adoption of grades which would enable refiners to secure prices in line with manufacturing costs for the gasoline which was better than U. S. Motor specifications.

This discussion brought to light the prevalence of the practice of offering high gravity gasolines with an endpoint as low as 400 for the ordinary domestic grade. Other phases of the numerous ramifications of gasoline prices and specifications were aired.

Dr. E. R. Lederer, of the Texas Pacific Coal & Oil Co., stated that the Mid-Continent refiners had not been given the consideration to which they were entitled in the adoption of new specifications on petroleum products by the government agencies.

P. J. Gwynn, of the Iowa Park Producing & Refining Co., who was appointed chairman of the association's export committee a year ago, reviewed the developments of the past year. This committee has worked with the Export Oil Association, Inc., throughout the year, and Mr. Gwynn offered a resolution that

this work be continued during 1930. The resolution was adopted.

Mr. Gwynn said that on the whole the new export plan promulgated by the Oil Export Association had worked out satisfactorily for the Mid-Continent refiners.

The membership was guests of the Louisiana and Arkansas Refiners Association at a dinner and entertainment Monday night. The session of the manufacturers committee started Tuesday afternoon and will continue Wednesday. A banquet for those in attendance was given Tuesday night at the Washington-Youree Hotel by the Louisiana-Arkansas association.

STANDARD OF INDIANA TO ADD 2,000,000 SHARES

(Continued from Page 205)

"A new high record for cash dividends distributed was established, the total being $5,707,673. The sum of $1,077,798 was used for purchasing 27,300 shares of common stock of the company at a time when they were obtainable at prices far below their book value. The residue of the earnings has been retained in active business and is reflected in the enhanced net worth of the oustanding capital stock as shown in the balance sheet. While in 1929 only about $1,000,000 was used for expanding the several investments in affiliated and nonaffiliated companies, nearly $19,000,000 was expended for physical properties of various kinds. Almost one-half of the latter sum was used for the acquisition of marketing facilities in this country and abroad.

"Overproduction led all producers to seek new market outlets for their own goods, disturbing existing individual relations between manufacturers, jobbers and retailers, and in turn creating new outlet facilities to replace connections that had been severed. Whenever possible we acquired previously existing distributor business but by force of circumstances were compelled to a large extent to undertake development and construction.

"Under the stock purchase plan for employes, authorized at annual meeting May 7, 1929, employes numbering 3,795 purchased 15,313 shares of stock at $40 a share."

Barnsdall Corp.

The 1929 report of the Barnsdall Corp. shows net income of $14,327,502 after all expenses, including interest and taxes. After deducting depreciation, depletion and development charges of $7,123,178, and after adjusting losses applicable to minority interests, the balance applicable to the outstanding capital stock was $7,205,162, equivalent to $3.20 a share on 2,247,602 shares, including 31,100 shares purchased during the year. This compares with $4,039,861, or $3.13 a share on 1,288,592 shares, the average number outstanding in the preceding year.

All drilling and intangible development costs incurred during 1929 amounted to $2,686,704 and were charged against earnings. E. B. Reeser, president, said that "as a result of unstable conditions operations have been carried on in harmony with 'proration' programs in effect in various fields."

The ratio of net current assets to net current liabilities on December 31 was 4.36 to 1, with current assets amounting to $10,649,699 and current liabilities $2,435,435.

Humble Oil

Pamphlet report of Humble Oil & Refining Co. and subsidiaries for year ended December 31, 1929, shows net profit of $32,535,080 after interest, depreciation, depletion, intangible development costs, Federal taxes, etc., equivalent to $10.93 a share (par value $25) on 2,974,645 shares of stock. This compares with $19,277,145 or $6.50 a share on 2,964,132 shares outstanding in 1928.

I. T. I. O.

Stockholders of Indian Territory Illuminating Oil Co., controlled by Cities Service Co., approved increase in authorized stock to 15,000,000 shares from 9,500,000 and change in par value to no-par from $1. The previously authorized amount, 9,500,000 shares, of which approximately 7,500,000 shares are now outstanding, will be known as Class B common, which will have sole voting rights. The additional 5,500,000 shares newly authorized, of which 1,250,000 shares will be issued in connection with the recent purchase of Foster Petroleum Corp., will be non-voting Class A.

Southwest Pennsylvania Pipe Lines

South West Pennsylvania Pipe Lines Co. declared the regular quarterly dividend of $1, payable April 1 to stock of record March 15.

Standard of Ohio

Standard Oil Co. of Ohio declared regular quarterly dividend of 62½ cents on common, payable April 1 to stock of record March 14.

Transcontinental Oil

Stockholders of the Transcontinental Oil Co. have voted to reclassify the company's capital stock by issuing one new share of no par stock for each two no par shares now outstanding. The authorized capital of the company will be increased to 8,000,000 shares of new no par stock, while the outstanding stock will be reduced from 6,544,219 shares at present to 3,272,110 shares of new stock. Directors were re-elected and officers reappointed.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Saturday, was as follows:

Sept. 7	59.16	Dec. 4	50.60
Sept. 14	60.40	Dec. 11	50.51
Sept. 21	57.93	Dec. 18	49.24
Sept. 28	58.63	Dec. 24	47.36
Oct. 5	57.00	Dec. 31	48.86
Oct. 12	59.75	Jan. 8	48.56
Oct. 19	58.70	Jan. 15	48.38
Oct. 26	54.59	Jan. 22	47.13
Oct. 31	42.29	Jan. 29	47.46
Nov. 8	48.31	Feb. 5	48.13
Nov. 15	47.61	Feb. 12	47.49
Nov. 22	47.76	Feb. 19	45.85
Nov. 29	48.60	Feb. 26	46.71
		Mar. 5	46.79

REFINERS ACCEPT WILBUR'S PRINCIPLE

(Continued from Page 45)

"We are bound to recognize that we are in a period of chronic overproduction, quite different from overproduction situations we have had in the past where the oversupply brought about price conditions that discouraged new activities and in a comparatively short period of time resulted in production declining to and even below market requirements.

"At the end of 1929 there was in storage in the United States over 500,000,000 bbls. of crude oil, with estimates of potential shut-in production running as high as 1,200,000 bbls. daily in the United States and 800,000 bbls. in other countries.

"New and scientific methods of finding producing structures and improved methods of drilling that permit of producing from greater depths are likely to prolong this condition over a much longer period than we have ever experienced before. This condition should not and need not, however, be a menace or handicap to the industry if proper advantage is taken of this ability to explore and determine the underground reserves without the necessity of producing and storing above ground.

Remedy With Producers

"The remedy does not lie in legislation penalizing the purchasing and transportation companies. The legislature cannot repeal the law of supply and demand. The remedy would appear to lie in suitable conservation legislation which permits producers themselves in the principal oil producing states to co-operate more freely in maintaining a balance between production and market requirements. If the 1929 production had been kept within the limits of 1928, according to the economic program outlined at Houston a year ago, there probably would have been no cut in the price of crude oil. This course has in it about the only promise of a stability of crude prices that will admit of the operation of smaller producing properties and wells of small production, of which there are many thousands.

"The efforts of the industry to voluntarily restrict production, while not entirely satisfactory, have been in a large measure successful. They have resulted in the recognition of all classes of producers, large and small, that their best interests lie in the ultimate success of this activity. The movement has generally had the sympathetic support of the Federal Oil Conservation Board and the state authorities. The failure to accomplish all that was hoped lies in the legal difficulties, particularly in the states of California and Texas. California's crude production in 1929 exceeded the 1928 production by over 60,000,000 bbls. Texas' production exceeded that of 1928 by 41,000,000 bbls. The increase of the entire United States amounted to 104,000,000 bbls.

Technical and Legal Obstructions

"This company took the position publicly about a year ago that the remedy for the condition of overproduction rested with these two states. It repeats that position today. If California under its present conservation laws can bring its production back to near the 1928 level, and if the legislature of Texas now in session will improve its conservation laws so that the producers of that State can bring their production back to the 1928 level, such economic reasons as warranted the recent price cut can be removed. Any attempt to check the situation through regulation of refinery runs or gasoline stocks would appear to lead into almost unsurmountable technical and legal difficulties, whereas each state can deal with production within its own borders.

"We were among the last of the large purchasing companies to meet the recent price reduction and followed reluctantly. It is obvious, however, that competitive conditions do not permit us to pay more for crude than our principal competitors. We believe that the general spirit of co-operation within the industry that was and is followed by the producers should have influenced the principal purchasing companies to attempt to maintain crude prices until the co-operative movement had received every possible opportunity of succeeding."

Shell Union to Co-operate

President J. C. Van Eck, of the Shell Union Oil Corp., in reply to an inquiry from The Oil and Gas Journal, wired:

"We are in sympathy with the suggestions and recommendations of the Federal Oil Conservation Board. Shell Oil Co. has already taken steps in California to reduce its refinery runs to six-sevenths of normal intake. Shell Petroleum Corp. some time ago reduced runs in its refineries in the Mid-Continent and Indiana territory so that stocks of gasoline on April 1 will be substantially less than stocks a year ago but is still further considering the matter with a view to bring refinery operations down in line with the suggestion of the Federal Oil Board."

Standard of California

The Standard Oil Co. of California announces that effective immediately it will operate its refineries on the equivalent of a six-day week. Refinery operations of necessity being continuous, this will be accomplished by reducing the weekly runs of crude oil one-seventh. This will be done without laying off any labor and without any reduction in pay.

The Standard Oil Co. of California will continue to operate on the reduced schedule so long as conditions permit and in case this schedule does not produce sufficient gasoline to meet its outstanding obligations, it will purchase gasoline from other California refiners if such is available, rather than to increase the runs of crude oil to its stills.

"The suggestion of the Federal Oil Conservation Board," says this statement, "comes at a particularly opportune time for the California petroleum industry. Under the crude oil curtailment plan in California, the potential production in California of 1,020,000 bbls. a day was reduced on November 1, 1929, to 710,000 bbls. a day. Under the new curtailment plan, effective March 1, it is aimed to still further reduce the production one-seventh or to 609,000 bbls. a day.

"It is estimated that this production of 609,000 bbls., or 60 per cent of the California potential production, is sufficient to meet the requirements of California's natural markets in 1930, and that if the refiners of California reduce their refinery runs of crude oil one-seventh, it will put an immediate stop to the wasteful building up of stocks of gasoline in storage. California's stocks of gasoline during 1929 increased at the rate of 15,500 bbls. a day, or about 5,600,000 bbls. for the year, and in January of this year these stocks increased at the rate of 44,000 bbls. a day."

Indiana

President E. G. Seubert of the Standard Oil Co. of Indiana states that notwithstanding the Indiana company has been running only sufficient crude to meet requirements and stocks at present are less than a year ago it will start immediately reducing refinery operations by running materially less crude, thereby manufacturing less gasoline. This action it is stated, is taken with the thought of contributing to the general good of the industry and conforming in principle to the Federal Oil Conservation Board's recommendation of the six-day week plan. Imports of gasoline into the United States by the Indiana company and affiliated companies will also be materially less than originally planned the company states.

In an earlier statement President Seubert said:

"We are running only sufficient crude to produce gasoline to take care of our current requirements. If all manufacturers of gasoline will adopt the same course, the over-supply of gasoline should disappear very shortly, especially with the approach of the season of high consumption."

H. F. Sinclair's Statement

H. F. Sinclair, chairman of the board of Sinclair Consolidated Oil Corp., outlines that company's position in regard to the refinery curtailment program as follows:

"In accord with the spirit of conservation, Sinclair Consolidated Oil Corp. has not only curtailed its drilling operations and production of crude oil, but has also greatly reduced its refinery runs.

"In former years, we normally built up large stocks of gasoline during the winter months. Today as a result of the reduction of refinery operations put into effect several months ago, our storage supply of gasoline is only what is necessary to meet day-to-day requirements. In other words, anticipating present conditions, we have for months put into practical application the policy of curtailment now advocated by the Federal Oil Conservation Board."

Cities Service Attitude

H. D. Frueauff, vice president of the Cities Service Refining Co., expresses the opinion that balancing of output to distributive requirements, is the logical solution to the present problem confronting the gasoline market. Any arbitrary shutting down of Sunday operations would be ineffectual, he points out, if there is no restriction of the throughput during the six remaining days in the week, entirely aside from the physical difficulties which a Sunday refinery shutdown would entail. Cities Service Refining, he disclosed, has already completed its own "house cleaning" problem, inaugurated some months ago in an effort to get gasoline stocks down to 1929 levels by April 1, this year, and has progressed to the point where its holdings are under 1929 levels, and the company is a large gasoline buyer in the open market.

"The only solution to the gasoline problem," said Mr. Frueauff, "is the balancing of gasoline output by individual companies to their distributing requirements. This policy should be adopted rather than a plan allowing refineries to run six days a week and shut down on Sunday, without regard to the quantities they may run during the six days. Companies producing gasoline in excess of their marketing requirements should curtail, but curtailment should

not be made applicable to those companies which have already taken this step.

"Cities Service is now a large buyer of gasoline, and has definitely got its own house in order in so far as production is concerned. Our company has been working on the suggestion put forth earlier in the year that gasoline stocks as of April 1, this year, should be no larger than they were on April 1 a year ago. Cities Service Refining Co. gasoline holdings by April 1, as a matter of fact, will actually be smaller than our stocks on the same date last year."

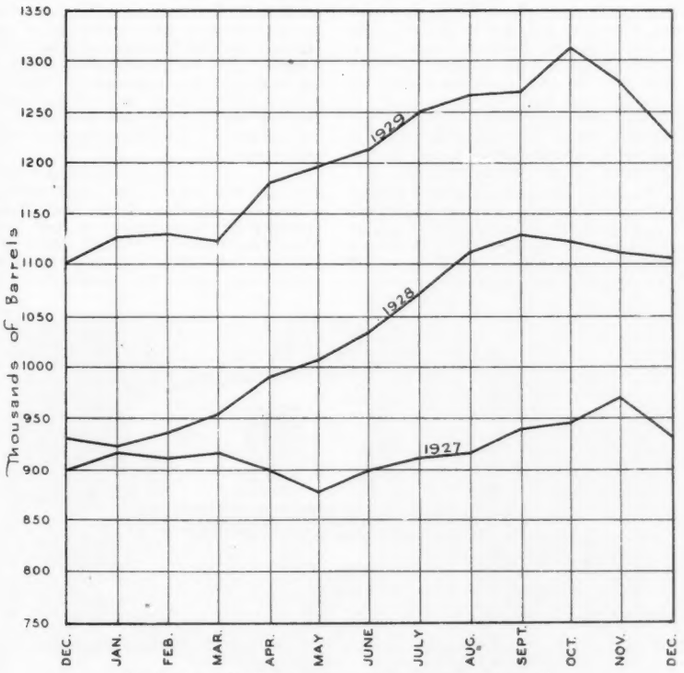
Vacuum's Position

Vacuum Oil Co. is not directly affected by the Oil Conservation Board's suggestion, according to Mr. Hadley, in charge of refinery operations for the company. The Vacuum refineries at Paulsboro, N. J., and Olean, N. J., he pointed out, are run mainly for lubricating oil production, with gasoline merely an incidental product, and one of small importance.

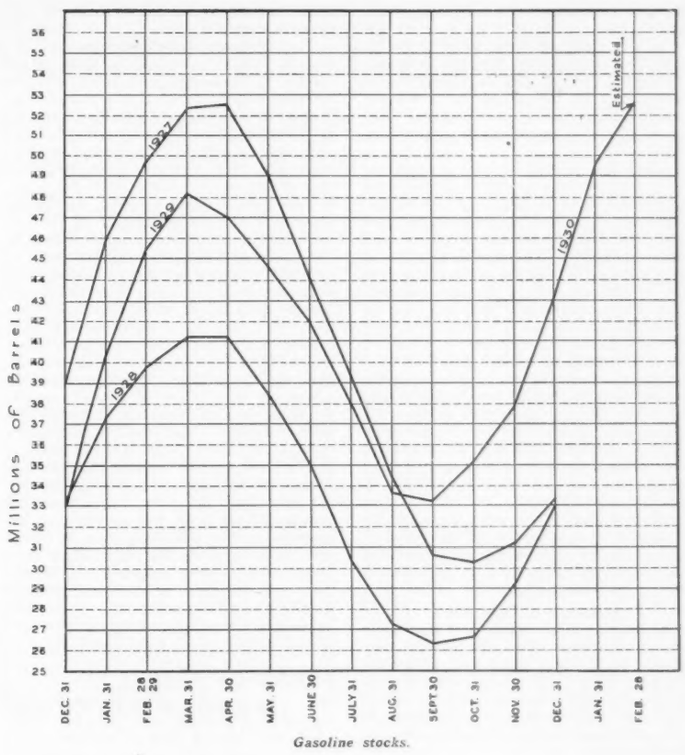
In as much as the overproduction problem, which is acute on gasoline, does not serve as much a factor in the market for lubricating specialties, Mr. Hadley declared, there is little likelihood of

(Continued on next Page)

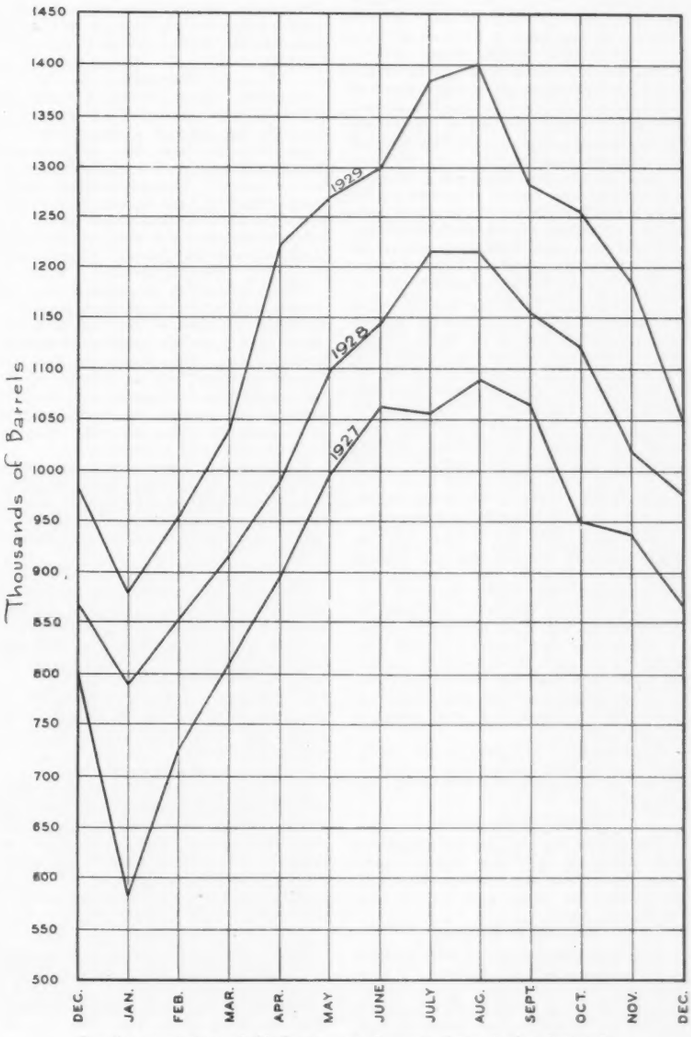
Gasoline domestic demand (daily average).



Gasoline supply (daily average production plus imports).


Millions of Barrels
1927
1929
1928
1930
Estimated
DEC. 31 JAN. 31 FEB. 28 29 MAR. 31 APR. 30 MAY 31 JUNE 30 JULY 31 AUG. 31 SEPT. 30 OCT. 31 NOV. 30 DEC. 31 JAN. 31 FEB. 28

Gasoline stocks.



Gasoline total demand (daily average domestic demand plus imports).

The above charts were loaned to The Oil and Gas Journal by Ray Lyman Wilbur, Secretary of the Interior and Chairman of the Federal Oil Conservation Board. They formed the basis for his recommendation to the petroleum industry to curtail gasoline production.

Vacuum adopting the one-seventh reduction in runs.

Gulf's Reserve Low

Gulf Refining Co. sees no necessity for falling in line with a general cut of one-seventh in throughput or a Sunday shutdown, according to reports from Pittsburgh quoting officials of the company.

According to this report, officials of the Gulf company stated that the company has been making only sufficient gasoline for the company's current needs with the storage stocks of motor fuel now on hand not only lower than a year ago but at the lowest point in the history of the company. Under these conditions, it is added, there will be no necessity for the Gulf company to cut refinery operations further.

Atlantic Favors Cut

Atlantic Refining Co. has been working on an individual curtailment policy for some time, Philadelphia advices indicate, and regards the curtailment problem one for individual action rather than any general one-day per week shutdown or arbitrary reduction of one-seventh in throughput.

The company is in sympathy with the principle of curtailment of overproduction of crude oil and gasoline, and has been thinking along lines of curtailment for several months past.

Standard of New York

Standard Oil Co. of New York, while not commenting officially on the suggested curtailment program, is understood to have been working out a curtailment program in its refinery operations for some time, and is in thorough sympathy with the one-seventh reduction in throughput.

Refineries of the New York company are operating at but 80 per cent of capacity at this time, it is reported.

Prairie Adopts Plan

The Prairie Oil & Gas Co. on Tuesday made the following announcement in connection with the Sunday shut-down movement, again brought to the front by the recent suggestion of the Federal Oil Conservation Board.

"The Prairie does not own or operate any refineries or natural gasoline plants except the limited activities of its subsidiary, the Producers & Refiners Corp., which company immediately adopted the suggestion of the Federal Oil Board to reduce its operations one-seventh.

"In February, 1929, the Prairie Oil & Gas Co. was one of the first of a number of companies to initiate the Sunday shutdown movement in the Seminole Pool, Oklahoma, which was followed by 15 or 16 companies. At the same time the Prairie shut down all of its Sunday operations in the Burbank Field, has since continued that plan in Burbank, and has gradually extended the Sunday shutdown to its properties in Glennpool and practically throughout Oklahoma where it has had any production of importance.

"For some time the Prairie has believed and still believes that the Sunday shutdown is feasible and practical and its experience has shown that its producing properties will not be injured by this program and it is heartily in favor of seeing this plan universally and continuously adopted throughout the industry which will certainly further the cause of conservation and also materially improve the happiness and well being of the employes.

"The company has given orders to extend the Sunday shut-down movement as far as practicable to all of its activities."

Carter Shuts Down

The Carter Oil Co. and the Oklahoma Pipe Line Co. put the Sunday shutdown into effect on Sunday, March 9, an account of which is given on page 58 of this issue.

Magnolia to Conform

Magnolia Petroleum Co. will conform to the suggestion of the Federal Oil Conservation Board to curtail Sunday work and adhere to a six-day week as much as possible. Officials are already at work on the problem.

Union Oil to Reduce

The Union Oil Co. of California has announced that it will reduce its refineries' operations to six-sevenths of the present schedule.

Standard of Louisiana

D. R. Weller, president of the Standard Oil Co. of Louisiana, announced that the company's refinery at Baton Rouge, La., would cut its crude oil purchases and its refinery output by one-seventh, in line with the federal oil conservation board's suggestion that gasoline refining operators be put on the basis of a six-day week, in order that waste incident to the increasing of surplus stocks may be avoided. The curtailment program began March 9.

California Shipments Questioned

While announcements of various oil company executives dealing with the refinery curtailment plan thus far have frequently mentioned the necessity of a proportionate reduction in imports of crude oil and products, nothing has yet been said regarding any letdown in the movement of California gasoline eastward, to balance the cut in output in this territory. Receipts of California gasoline at East Coast and Gulf ports during the first two months of 1930 have shown an increase of approximately 10 per cent over those for the comparable period of 1929, with indications that this percentage gain will be largely increased over the balance of the year. With East Coast refiners over supplied with motor fuel and receipts of South American gasoline steadily increasing, the California gasoline situation is cause for considerable concern to East Coast refiners.

TREND OF PRICES IS SLIGHTLY DOWNWARD

(Continued from Page 44)

will no longer be a factor. Even though it would be unlikely that price advances would follow immediately it would permit trading with a greater degree of certainty.

Kerosene

Kerosene prices showed a slight decline in Oklahoma and North Texas and the offerings were in larger volume but apparently the price has not been sufficiently attractive for exporters to enter the market. In some sections, refiners are finding a good movement of material to the North Central states for agricultural uses but this has benefited the Kansas and Oklahoma refiners most.

Natural Gasoline

Prices remained unchanged for the week and the natural gasoline market is probably in a better position than any other branch of the industry. Manufacturers realize the importance of the Oklahoma City Field as a factor in future production but outlets have been developed and storage has been arranged to dampen the effect of sudden changes in production and consumption.

Contracts are being made based on the refinery market and for that reason interest is shown in that market and at such a time as refinery prices move upward, spot prices are almost certain to follow.

Gas Oil

The heavy consuming season for industrial gas oil and the heavier gas oils used for household and office heating is near an end and the quantity of this material available has increased. Prices have been shaded one-eighth cent in a few instances, the material going out at 2⅜ cents but most of this has been for resale and the general market has been held at 2½ cents.

Distillates

Distillates and furnace oils have been offered in larger volumes also and this simply reflects the decline in consumption. This material will become less popular over the coming months and prices will probably remain near 3 to 3¼ cents until a general price change is made in the entire list of products.

Fuel Oils

Price reductions of 2½ to 5 cents a barrel were made on all grades of fuel oil in the past week. This was also a reflection of the lesser seasonal demand. The increased crude runs and the decrease in the consumption has brought more attention to the fuel situation.

Lubricants and Wax

Two hundred viscosity 3 colored neutral oil was being sought by several manufacturers during the past two weeks and a scarcity has developed. This grade apparently is the only one of the list that has shown strength but this trend has served to revive hopes in the neutral market. This demand came as a surprise to some because most manufacturers expected a decline in the consumption of the lighter lubricating oils and a greater demand for bright stocks as a result of changing to the use of heavier oils in summer. On the other hand, bright stock and cylinder stocks have been traded with uncertainty. A favorable movement of bright stock is being witnessed and contracts have been made in many cases which guarantee a favorable price for the year but stronger outside competition is possible in the future. Many refiners on the Gulf Coast and in the Chicago area as well as the refiners in the Mid-Continent have increased their bright stock plants. Most of this construction work is not finished and the actual effect of the increase in production will not be felt for months.

Wax prices remained unchanged with a favorable movement in tank cars to domestic buyers serving to equalize the rather slow movement of the material for export.

TEXAS PIPE LINE BILL PASSED BY LEGISLATURE

AUSTIN, Tex., Mar. 10.—The pipe line and oil storage regulation law will become effective in Texas in about 90 days if approved by Governor Moody. The house Friday passed the senate bill that passed that body Thursday. In the senate the bill was passed by 22 to 4, and in the house the vote was 91 to 14, nine short of the necessary two-thirds to put the act into immediate effect.

GAS INDUSTRYS PART IMPORTANT IN MEETING

(Continued from Page 56)

natural gas can sell itself, Mr. Rosenkranz, in his paper on "Ways and Means of Promoting Domestic Gas Sales in Natural Gas Territory," urged more modern sales methods. He advocated extensive use of advertising, pointing out that his company, to assist the selling organization, endeavors to follow the big advertisers of today in providing high-class advertising copy for newspapers.

Mr. Mullaney, in answering the question, "What Is Ahead of Us?" told of the growth of the gas business in late years.

"Within the last dozen years," said Mr. Mullaney, "we have made and distributed more gas than had been made before in all the years combined since Murdock, Winsor, Lebon and the other pioneers originated the gas industry near the beginning of the nineteenth century.

"Some of you electrical men—I can afford to speak plainly perhaps, since I am a part-time electrical man myself—are apt to be a bit chesty about your branch of the industry. Less than 10 years ago you were getting much encouragement from the prediction of more or less eminent economists that the gas business was on its way to the industrial scrap pile and that electrical development had a mortgage on the future. But in 1929 the consumption of natural and manufactured gas in the United States amounted to 28,000,000,000 therms. This was equivalent, in usable energy, to $35,300,000,000 kilowatt hours of electrical energy and that amount of electrical energy was a little more than nine times the total production of electricity in 1929."

Rights of Customer Discussed

In a paper on "Law and Economics Dictate Same Rate Forms," presented before the general session of the convention Tuesday forenoon, F. C. Hamilton, New York, valuation and rate engineer for Henry L. Doherty & Co., recounted the history of rate-making in the natural gas business, beginning with the early days when a flat monthly rate was charged. At that time gas was used for lighting only and the same rate was applied to all customers, whether they had three lights in a residence or 40 in a hall. Mr. Hamilton contended that the gas consumer has a right, which he may defend in the courts, to a rate which does not compel him to pay more than the cost of service plus a fair return on the gas company's investment. In this connection he said:

"The law prohibits the enforcement by regulatory bodies of a rate that is not compensatory to the company, and since that law has been invoked almost invariably to stop the enforcement of a rate that was confiscatory of the company's property, many people have overlooked the fact that it also prohibits the enforcement of a rate which may confiscate the property or property rights of the customer. It is my belief that the right to obtain service from a public utility at a rate which does not represent more than the actual cost of service plus a fair return on the property devoted to the service of that customer is a property right of each individual citizen. It is my belief that the property right is one that is valuable and one the possession of which can be defended by a citizen by the same legal procedure which the companies have used to defend themselves against the enforcement of a rate which they proved to be confiscatory of their property."

TRUCKS EQUIPPED TO SELL LIQUEFIED GAS

(Continued from Page 197)

or 40 pounds. The water tank is built into the kitchen cabinet underneath the sink and is filled by means of a hose and a valve in the air line that connects the air tank with the water tank. This affords ample pressure for hot and cold running water at the sink, the water being connected to the water faucet on the sink separately.

The truck is a regular one and a half ton Reo truck with the model kitchen constructed especially to fit the chassis.

The truck motor refuses to start until the kitchen doors are closed and locked as the motor receives no current with one of the doors open. This insures safety.

Specially designed truck used by Lone Star Gas Co. in demonstrating Stargas.

Oxy-Acetylene Welding in Buildings

Fundamentals of Workmanship and Materials Considered. Avoidance of Distortion and Locked Up Stresses

By G. O. Carter
Consulting Engineer, The Linde Air Products Co.*

The oxy-acetylene welding of structures such as bridges and buildings is closely allied with electric welding as applied to the same type of structure. The two processes are so alike in principle that for purposes of drawing up codes that will provide for the correct steps to be followed in welding construction there is no distinction drawn between them. Proof of the ability of the utilizer of either process to give satisfactory results is and should be the essential requirement.

At the present time most thought is being given to the use of welding in new buildings, rather than in modification or repairing of old ones. For the welding of buildings it is essential that structures be designed with a knowledge of building standards and of welding standards applied to structural steel. No work should be undertaken where public liability might be incurred without the approval of a qualified engineer and supervising authority. The use of correct standards for welding in building construction has been recognized as being so vital that for at least two years one of the most important committees of the American Welding Society has devoted its time to drawing up a code for the use of welding in building construction. Attention has also been given to the use of oxy-acetylene cutting of structural steel. The work of the Building Code Committee has been recognized by the authorities in New York City charged with the making of recommendations for the revision of the New York City building code and by similar code making bodies in many other cities.

A long series of tests of various types of joints has resulted in the development of certain standards for the types of joints commonly found in welded building design such as butt joints, lap or fillet joints, and tack or intermittent welding where the requirements do not call for the strength of continuous welds. These standards are based on the ability of the welder to do work of a certain definite quality which should be determined by qualification tests similar to those used by many organizations to assure good workmanship in other fields of production welding, such as pipe line welding. For each class of work proper test plates should be provided and the test specimens should be subjected to pulling and bending tests to prove their strength and ductility.

Structural steel should comply with the latest A.S.T.M. specification No. A-9. The quality of this steel is generally higher than that of low carbon pipe, and therefore high grade welding rods are most suitable and are being used in practice. The minimum requirements for welders' qualification tests should also be higher in structural welding than with low carbon pipe, and practically the same as for the welding of high strength pipe.

Handling Materials

Having made sure of the fundamentals of workmanship and materials we must consider the problem of handling the materials during welding so as to avoid distortion and locked up stresses. It is probable that almost everyone present has tried to weld structural steel at one time or another, or as an executive has specified such welding and has been advised of the difficulties. We all recognize that structural steel welding is quite a bit different from the welding of tanks or the joining together of pipe, and this particularly applies to the oxwelding process. The reason is, that the application of heat to one flange of a beam or to one leg of an angle will cause the heated part to expand until the metal becomes softened by the heat; and the metal, being unable to support the stresses, will compress. This is called upsetting and results in a thickening of the metal. Upon completion of a weld, as the metal grows cool it has strength to offset the forces that tend to thin it out, therefore, the welded part is subjected to a powerful contraction. Should the weld be made on a shape that is not symmetrical, the contraction stresses will cause distortion so that the member will be given a bow shape or a twist.

Shop Methods

Shop methods can be developed for cases where welding must be applied under adverse design conditions. A trick frequently used is to bend a member slightly so that the welding operation will draw it back into line. This practice is similar to one frequently used in making pipe manifolds, and is somewhat along the lines of the practice of holding the sheets during the welding of the longitudinal seams of tanks. A skilled foreman is almost invaluable in structural fabrication because he can designate practices to be followed such as the compensation method just described or the use of jigs.

Where an appreciable quantity of work of a similar nature is to be done, it saves much labor in setting up the work if jigs are used. When the jigs are relatively heavy the difficulties due to distortion are practically eliminated, as the jigs hold the material in line during the cooling. Practically every welding shop is today familiar with the use of jigs for holding small articles, but it requires a little vision to picture the jigs required for roof trusses that take up a large portion of the floor space of a fair-sized shop. Correct design of jigs provides for setting up with accuracy of fitting and with minimum of labor for centering webs and other members.

The use of jigs has made welding application successful in many other industries and will unquestionably play an important part in the use of welding of structural steel. In the manufacture of automobiles practically all of the welding of the bodies is done in jigs and the same applies to the manufacture of metal furniture. If we consider the problem for a few moments, we will realize that the welding of metal furniture is practically a structural steel welding problem although on very light materials and relatively small parts. Some pieces of furniture have almost 100 welded joints. It would be almost impossible to make a presentable object of that type except for the use of jigs.

Use of Jigs

Jigs can be used better in shop fabrication than for work in the field. It is obvious that for the field joints used in assembling the structure, jigs could be used only at considerable inconvenience and probably at great expense. On this account the welding of buildings will for some time to come be a combination of welding by the use of jigs and welding wherein the method of making the attachment will avoid warping.

Practically all the problems that have been considered for oxy-acetylene welding are present with electric welding, although the heating is more localized in the latter process. Experience in handling one process is generally an aid with the other but the two are not identical.

The standards with regard to the weld dimensions should be different for electric welding than for oxy-acetylene welding. This is particularly true when a fillet weld is specified or when intermittent welding is specified. With electric welding a light bead is usually deposited first and then a heavier bead, and in some cases of moderately heavy structures a third and fourth bead may be added. With oxwelding the metal is almost invariably deposited in one operation, and as the principal consideration is to obtain fusion into the base metal, it is not much more difficult to deposit a full section than to make a light bead.

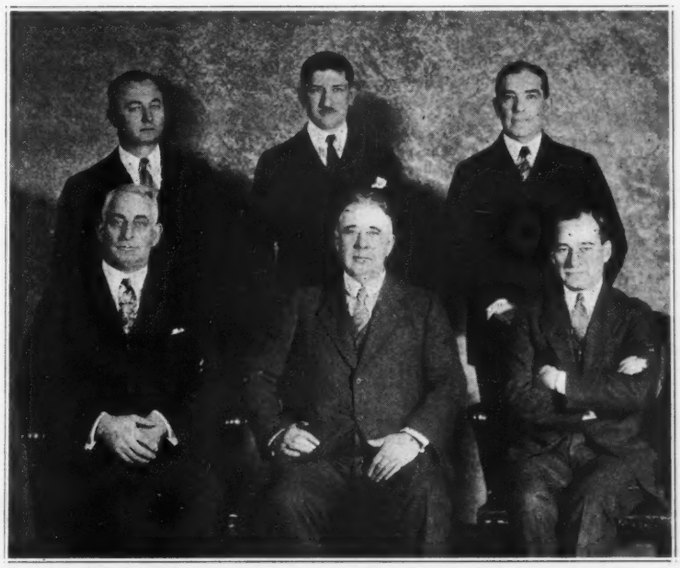
*Before fourth annual welding conference of North Texas Agricultural College, Arlington, Tex., March 13 and 14.

NATIONAL OFFICERS OF A.S.M.E. VISIT POINTS IN MID-CONTINENT

The Mid-Continent section of the American Society of Mechanical Engineers is acting this week as host to a group of national officers of the society consisting of Colonel Paul Doty of St. Paul, Minn.; Thomas L. Wilkinson of Davenport, Iowa; Prof. Jiles W. Haney of the department of mechanical engineering of the University of Nebraska, Lincoln, Neb.; William A. Hanley, chief engineer for Eli Lilly Co. of Indianapolis; Harry R. Westcott, president of Westcott & Mapes, Inc., consulting engineers and architects of New York City and New Haven; Charles W. Bennett, vice president of the Youngstown Sheet & Tin Plate Co. of Pittsburgh; James M. Todd, consulting engineer of New Orleans, La., and president of the Louisiana Engineering Society, and Charles E. Gorton of Memphis, Tenn.

This party of engineers was escorted to the booster station of the Oklahoma Natural Gas Co. at Kelleyville and the pipe line station of the Sinclair Pipe Line Co. at Hominy on Sunday and on Monday morning went to Oklahoma City where they met Calvin W. Rice, secretary of the society; Prof. R. L. Daugherty of the mechanical engineering department of the California Institute of Technology at Pasadena; Frederick H. Dorner, consulting mechanical engineer of Milwaukee, Wis., and James D. Cunningham, president of the Republic Flow Meters Co. of Chicago.

Ernest Hartford, assistant secretary of the society, has been in Tulsa for several days arranging the details of this meeting with the officers of the Mid-Continent section who include Arthur J. Kerr of the Pittsburgh Equitable Meter Co., chairman; William D. Moorer, of Moorlane Co., vice chairman; Fred Thilenius, of the Prescott Pump Co., secretary; H. M. Manley of the Barnsdall Oil Co., treasurer; B. P. Sibole of the Sinclair Pipe Line Co. and William G. Heltzel, chairman of the national committee of the petroleum division.



National Committee on Local Sections of the American Society of Mechanical Engineers. Standing: Left to right, James M. Todd, New Orleans; Ernest Hartford, New York; Charles W. Bennett, Pittsburgh. Seated: Left to right, Thomas L. Wilkinson, Davenport, Iowa; Paul Doty, St. Paul; Harry R. Westcott, New Haven, Conn.

DEATH OF ANSON ARGUE

TOLEDO, Ohio, March 8.—Anson Argue, the last survivor of the five Argue brothers, for many years prominent figures in the oil business, died at his home here Wednesday, at the age of 83 years.

Mr. Argue was born in Canada but in 1865 he went to the Pennsylvania oil fields and operated in the various western Pennsylvania pools, but particularly in the Bradford Field. The Argue brothers, Henry, Watson, William, Thomas and Anson, were widely known in the several oil states east of the Mississippi River in the earlier years of the oil business. Anson Argue was a member of the firm of Argue & Compton and Roth, Argue and Maire Brothers. They were producers in Ohio and Illinois and later in Kansas and Oklahoma.

The funeral was held Friday in this city.

GOOD LUCK FATAL TO OWNER

BRADFORD, Pa., Mar. 8.—Overcome by the excitement when a gas well in which he was financially interested blew in, P. A. Oakes of Norwich, a farmer, died on Tuesday. The well was drilled by M. J. Gallup and the estate of P. A. Oakes, on the Gallup farm at Norwich, opening a new gas producing area.

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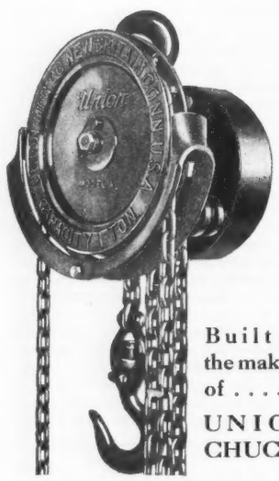

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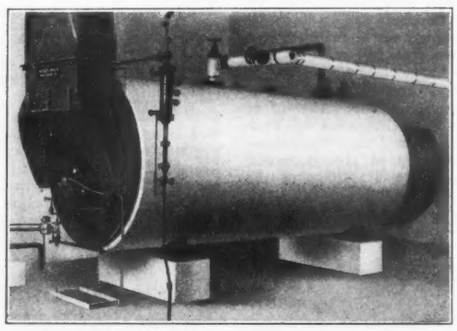

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MEETING TO DISCUSS PLANS FOR STUDYING PIPE LINE CORROSION

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., March 10.—After four years of study of corrosion and of protective coatings for underground pipe lines, comprehensive plans have been developed for the co-operative investigation of these problems by the interests involved. For the purpose of effecting an agreement on details of the procedure to be followed, a meeting has been called by the United States Bureau of Standards at 10 o'clock a. m., March 18, at the Mayo Hotel, Tulsa.

This conference has been decided upon as the best method for adjusting differences of opinion with respect to methods of investigation. The leaders in this movement concluded that unanimity on details could not be effected by correspondence, but are confident that once the various interests have an opportunity to talk together an understanding will be reached.

Manufacturers of protective coatings, leaders in the oil industry and members of the Bureau of Standards are expected to formulate plans at this time for conducting the proposed three-cornered tests of protective coating for underground pipe lines. The corrosion committee will meet as a unit, and the Bureau of Standards has invited representatives of manufacturers and others interested in these tests. In fact all persons who have indicated an interest in this work have been asked to attend the conference.

E. P. Bly has called a meeting of the committee on corrosion of oil field equipment to meet at the same place Monday, March 17, for discussion of plans for the three-cornered test by this committee prior to attendance at the meeting called by the Bureau of Standards on the following day.

Bureau's Prestige Expected to Help

Gratification has been expressed over the fact that the Bureau of Standards has taken the initiative in calling this conference as its prestige is expected to go far toward bringing success.

Three distinct plans of investigation have been submitted for consideration at the Tulsa meeting. One of these plans has been prepared by a member of the corrosion committee, another by the representative of the manufacturers' group and the third by a member of the Bureau of Standards. All of the plans have much in common and have been circulated widely among students of the problem of protective coatings. The differences between these plans are regarded as of minor importance, which fact is believed will make it easier for the several interests to unite their efforts toward the common end sought by the conference.

A tentative program for the tests to be presented by Dr. Gordon N. Scott, institute research associate at the Bureau of Standards, includes a list of coating types for test, such at cut-back bituminous materials, greases, emulsions, enamels, mastics, felt-reinforced bituminous materials other than greases, woven fabric reinforced bituminous materials other than greases, treatments involving metal reinforcements and miscellaneous treatments.

Senator Thomas Wants Industry Investigated If Tariff Not Passed

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Mar. 11.—Senator Thomas of Oklahoma states that if a tariff on oil is not provided in the pending tariff bill he will introduce a resolution calling for a comprehensive investigation of the oil industry by a senate committee. He is considering a plan to attach a provision to his amendment for a tariff on oil calling for an investigation of the oil industry by the Federal Trade Commission to protect the public by giving this information in case the tariff is placed on oil. He will not introduce his tariff amendment until the senate reaches its consideration, which may be late this week or in the early part of next week.

Senator Thomas states that in his judgment if a tariff is placed on oil the price of gasoline could be reduced with a reasonable profit to the refiners.

The senator's proposed senate committee investigation will contemplate the summoning of representatives of all the importing oil companies of the United States to determine the cost of producing crude oil in South America. Representatives of refining companies are also proposed to be called in order that the committee may determine the cost of refining and may study the various processes now in use. Inquiry will also be made to ascertain facts in respect to the production, transportation and distribution of crude oil and its products.

Senator Thomas stated that this investigation would seek to find out who establishes prices on both crude and refined products and to ascertain whether imported crude oil is used to depress domestic crude oil prices. He will also seek to ascertain whether there is a price fixing agreement among the large oil companies.

Last Saturday Senator Thomas introduced and the Senate adopted the following resolution:

Resolved, that the Secretary of the Treasury be requested to furnish to the Senate the following information:

The names of companies or organizations importing oil and/or gasoline into the United States.

The amount of oil and/or gasoline imported by each importing company or organization during the years 1927, 1928 and 1929.

The names of the cities containing the custom houses through which such imported oil and/or gasoline is cleared.

Late Fields

(Continued from Page 56)

hours. The oil was found in the Silicious lime at a total depth of 6,492 feet.

The other new well in the field was the Sinclair Oil & Gas Co.'s No. 2 Vencl. NE cor. NW SE, Section 31-11-2w, which is a half mile extension to the south, flowed 3,310 bbls. in 20 hours from the Simpson sand at 6,447-6,526 feet.

The Prairie Oil & Gas Co.'s No. 1 Hiddleston, SW cor. SE, Section 19-11-2w, an old producer, was drilled deeper and increased its production from approximately 166 bbls. an hour to 800 bbls. the first hour. The old total depth was 6,433 feet, and the present total depth is 6,468 feet.

The Texas Company's No. 1 Harjoche, NE cor. NW NE, Section 17-6-6, in the Konawa Pool, flowed 1,760 bbls. from a total depth of 2,938 feet.

GULF COAST

HOUSTON, Tex., Mar. 11.—The second producer on the southeast side of the Orchard Dome, Fort Bend County, was completed by Gulf Producing Co. in its No. 20 Moore which came in flowing an estimated 2,300 bbls. daily on a half-inch choke from sand at 3,961-80 feet. One joint of screen was set in the hole. The oil corrected to 27.8 gravity.

Production at Raccoon Bend, Austin County, was extended 4,000 feet to the east and slightly north Monday by Humble Oil & Refining Co. and Valley Oil Corp.'s No. 1 Duncan State Land, which flowed 270 bbls. daily of pipe line oil from sandy shale at 3,291 feet.

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TEXAS PANHANDLE

Week Ending February 26

Carson County

Dixon Creek Oil Co.'s No. 1 J. W. Eller, 330 feet south and west of the NE cor. NW, Section 200, Block 3, I.&G.N.

Collingsworth County

Shoup Brothers' No. 1 G. H. Adams, 410 feet south and 330 feet west of the NE cor., Section 96, Block 16, H.&G.N.

Gray County

Gulf Production Co.'s No. 4 J. N. Saunders-A, 330 feet south and 990 feet west of the NE cor. SW, Section 40, Block 3, I.&G.N. McAuley and others' No. 4 J. S. Morse, 330 feet north and west of the SE cor. NE, Section 2, Block 26, H.&G.N. Reynolds and others' No. 1 L. H. Webb, 330 feet south and 380 feet west of the NE cor. NW, Section 60, Block 25, H.&G.N. Baldridge & Lilly's No. 1 W. E. Melton, 330 feet south and east of the NW cor. E half SE, Section 95, Block B-2, H.&G.N. Danciger Oil & Refining Co. and Champlin Refining Co.'s No. 6 Cook-Faulkner, 330 feet south and 266 feet west of the northeast corner of their 120-acre lease out of Section 30, Block B-2, H.&G.N. J. H. Lenix and others' No. 1 C. W. Bradford, 330 feet south and west of the NE cor. W half SE, Section 118, Block B-2, H. &G.N. Magnolia Petroleum Co.'s No. 4 S. Faulkner, 330 feet south and 266 feet east of the northwest corner of the east 80 acres of Section 30, Block B-2, H.& G.N. Phillips Petroleum Co.'s No. 1 J. E. Wright-Wood, 330 feet north and 990 feet east of the SW cor. N half SW, Section 13, Block 3, I.&G.N. Same company's No. 2 J. E. Wright-Wood, 330 feet north and 990 feet west of the SE cor. N half SW, Section 13, Block 3, I. &G.N. The Texas Company's No. 2 J. E. Wright, 330 feet north and 990 feet east of the SW cor. SE, Section 13, Block 3, I.&G.N. W. Wilson and others' No. 1 S. Heaston, 330 feet north and east of the SW cor., Section 160, Block B-2, H.&G.N.

Wheeler County

Martin & Debous' No. 4 I. Close, at the C SW NE, Section 83, Block 23, H. &G.N. Murchison & Fain's No. 7 I. Close, C SE SE, Section 78, Block 23, H.&G.N.

NORTH CENTRAL AND WEST TEXAS

Week Ending February 26

Andrews County

Fuhrman Petroleum Corp.'s No. 1 W. T. Ford, 440 feet north and 2,200 feet east of the SW cor., Section 16, Block A-43, School Land.

Archer County

W. N. Alexander's No. 1 J. H. Turbeville, 1,155 feet north and 1,170 feet west of the SE cor., Section 177, S.A.& M.G., A-447. Bateman & Dingee and others' No. 1 W. P. Ferguson, 1,769 feet north and 1,096 feet west of the most southerly SE cor., Section 2, H.&G.N., A-1,179. J. P. Rayzor and others' No. 2 J. H. Turbeville-B, 750 feet north and 150 feet west of the SE cor. SE, Section 153, R. Carson Survey, T. F. Hunter's No. 2 A. H. J. Kunkel-A, 1,300 feet north and 1,350 feet west of the southeast corner of the A. H. J. Kunkel 203-acre tract and located in the G. W. Stell Survey, A-381.

Brown County

McGahhey and others' No. 1 C. E. Scott, 150 feet north and west of the southeast corner of the C. E. Scott 80-acre tract out of the H. Pressler Survey, A-2,040. G. P. Mitcham's No. 1 J. W. Newton-C, 5,650 feet north and 1,765 feet east of the southwest corner of the R. Honeycutt Survey, No. 623. Young Brothers-Alexander and Woodley Petroleum Co.'s No. 4 G. T. Butler, 150 feet south and 450 feet east of the most westerly northwest corner of the north 100 acres of the J. McGloin Survey, No. 801, A-668. C. K. Wasserman's No. 1 S. O. Looper, 883 feet south and 821 feet west of the northeast corner of the south 106.5 acres of the east half of the J. Woodward Survey, No. 620.

Callahan County

Oyster & Rife and others' No. 1-A W. Williams, 220 feet north and 280 feet west of the southeast corner of the west 200 acres of the south 320 acres of Section 1, Block 1, S.P.R.R.

Coleman County

L. Evans and others' No. 1 J. Stewardson, 150 feet south and 750 feet east of the northwest corner of the E.T.R.R. Survey, No. 94. Gibson & Johnson's No. 1 J. W. Barton, 1,192 feet south and 432 feet west of the NE cor., Section 27, L. C. Manson Survey, No. 80. Kidney-Kamon and Western Exploration Co.'s No. 3 J. Pfluger, 150 feet south and 960 feet east of the northwest corner of the W. Skurlock Survey, No. 280. McGahhey and others' No. 1 C. E. Shore, 1,050 feet north and 300 feet east of the SW cor., Section 72, Block 1, G.H.&H.

Comanche County

L. B. Fain and others' No. 1 I. Guinn, 433 feet south and 798 feet west of the southeast corner of the W. H. Martin Survey and located in the G.C.&S.F. Survey. Lone Star Gas Co.'s No. 1 W. W. Lloyd, 2,321 feet south and 1,715 feet east of the northwest corner of the W. W. Lloyd 428.75-acre tract out of the J. Rubarth Survey. Straub Oil Co.'s No. 2 J. R. Perry, 400 feet south and 600 feet east of the NW cor. SE NW, Section 50, Block 2, H.&T.C.

Cooke County

Fain-McGaha Oil Corp.'s No. 1 S. Goff, 1,170 feet north and 150 feet west of the most easterly southeast corner of the S.P.R.R. Survey No. 9, A-982. A. C. Hill and others' No. 1 H. Y. Gibson and others, 150 feet south and west of the northeast corner of the north 60 acres of the H. Y. Gibson and others' 136-acre tract out of the J. F. Johns Survey No. 10, A-1,569.

Crane County

Humble Oil & Refining Co.'s No. 2 University-C, 2,310 feet north and 330 feet west of the SE cor., Section 40, Block 30, University Land.

Culberson County

W. L. Kornrumpf and others' No. 1 W. D. Garren, 330 feet north and east of the SW cor., Section 15, Block 79, School Land.

Ector County

Skelly Oil Co. and others' No. 1 University-A, 990 feet south and 440 feet west of the NE cor., Section 1, Block 35, University Land.

Glasscock County

Group No. 1 Oil Co. and Continental Oil Co.'s No. 1 E. B. Miller, 330 feet south and 990 feet east of the NW cor., Section 162, Block 29, W.&N.W.R.R. Schermerhorn Oil Co.'s No. 3 A. Kloh and others, 330 feet north and 990 feet east of the SW cor. of Section 13, Block 33, T-2-S, T.&P.

Howard County

Plymouth Oil Co.'s No. 8 Kloh and others, 1,650 feet south and 2,310 feet east of the NW cor. of Section 5, Block 32, T-2-S, T.&P.

Jones County

Phillips Petroleum Co.'s No. 1 E. D. Coates, 900 feet south and 330 feet west of the NE cor. W half SW, Section 17, Block 19, T.&P.

Midland County

Pure Oil Co.'s No. 1 J. E. Hutt, 2,310 feet south and 330 feet west of the NE cor., Section 14, Block 38, Township 4-S, T.&P.

Montague County

Barnsdall Oil Co.'s No. 4 R. W. Cunningham and others, 150 feet south and 750 feet west of the northeast corner of their 22.5-acre lease and located in the L. B. Norton Survey, A-574.

Palo Pinto County

Wickens and others' No. 1 A. P. Wilber, 1,320 feet south and 330 feet east of the NW cor., Section 59, Burleson County School Land, League 3.

Pecos County

G. Anderson and others' No. 1 T. N. McKenzie, 480 feet south and 330 feet

White Trucks and Busses are easy to buy. Through the White Motor Securities Corporation you can arrange convenient terms and own a White while it is paying for itself in earnings.

New Heavy Duty WHITE Six
carries greater pay loads on faster schedules

In many fields of operation there is the urgent need of hauling extremely heavy loads over long-distance runs on faster schedules.

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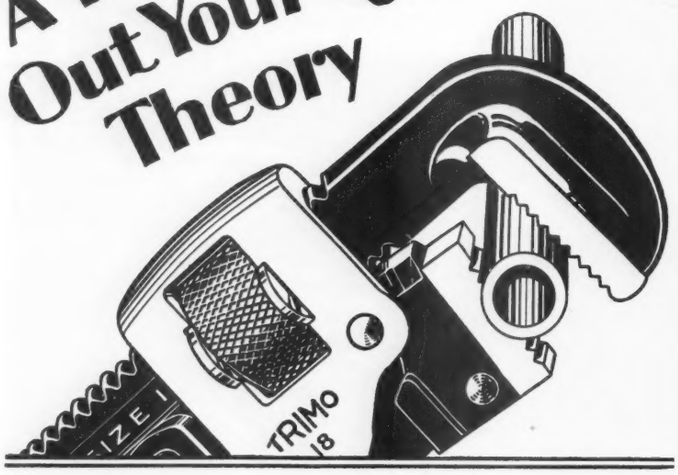

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east of the middle of the north line of Section 3, Block 604, G.C.&S.F., A-8,-557. E. W. Bennett and others' No. 1 E. W. Bennett and others, 350 feet west of the middle of the west line of Section 1, Block 119, G.C.&S.F., and located in Section 8. Cosby Production & Royalty Co.'s No. 1 Cordova Union Oil Corp., 330 feet south and west of the northeast corner of the south 320 acres of Section 11, Block 11, H.&G.N. Cromwell-Tanner & Ellis' No. 1 University, 1,980 feet north and 1,320 feet west of the SE cor., Section 16, Block 16, University Land. Galt-Brown Co.'s No. 1 R. M. Thompson, 660 feet north and 1,100 feet west of the SE cor., Section 71, Block 194, G.C.&S.F.

Shackelford County

Midwest Exploration Co.'s No. 4 W. Y. and R. A. Davis, 1,000 feet north and 600 feet west of the SE cor. W half NE, Section 13, Block 12, T.&P. C. Morton and others' No. 1 J. B. Matthews, 150 feet south and 750 feet west of the NE cor. of the SW SW, Section 29, Block 10, E.T.R.R. States Oil Corp.'s No. 1 M. B. Proctor and others-A, 400 feet south and 100 feet west of the most easterly SE cor., Section 13, Block 3, H.&T. C. and located in Section 5, A.B.&M.

Stephens County

Republic Production Co.'s No. 8 M. C. Knox, 400 feet north and 140 feet west of the SE cor., Section 5, Block 5, T.&P. Alworth and others' No. 1 E. G. Moore, 600 feet north and west of the southeast corner of the E. G. Moore 147.5-acre tract out of Section 7, Block 6, T.&P.

Terry County

Atlantic Oil Producing Co. and Penn & Midwest Exploration Co.'s No. 1 P. Carlisle, 990 feet north and west of the SE cor., Section 58, Block E, E.L.&R.R.

Upton County

Gulf Production Co.'s No. 74 J. T. McElroy, 2,102 feet south and 660 feet east of the northwest corner of the Gulf Production Co.'s lease out of Section 185, Block F, C.C.S.D.&R.G.N.G. Eppenauer Drilling Co.'s No. 1 W. A. Chaney, 2,-310 feet south and 330 feet east of the NW cor., Section 18, Block 3, M.K.&T.

Ward County

S. Richardson and others' No. 1 G. W. O'Brien and others, 322 feet south and 360 feet east of the NW cor., Section 5, Block F, G.M.M.B.&A.

Wichita County

Arkansas Fuel Oil Co.'s No. 27 Kemp & Kempner-A, 400 feet south and 1,750 feet west of the northeast corner of Block 82, K.W.V.L. R. R. Clark and others' No. 1 W. P. and J. F. Bickley, 1,800 feet south and 1,783 feet west of the NE cor., Section 2, C.&M., A-594. W. Hammon's No. 1 Fassett & Tuttle, 150 feet north and east of the southwest corner of the J. Johnson Survey, A-503. W. H. Hammon's No. 10 S. Mitchell and others, 1,090 feet south and 150 feet east of the northwest corner of the J. T. Lewis Survey, A-460. T. F. Hunter's No. 11 Waggoner Brothers-C, 150 feet north and 1,304 feet east of the southwest corner of Lot 1, H. George Survey, A-454. Turman Oil Co.'s No. 18 W. T. Waggoner, 830 feet north and 375 feet west of the southeast corner of their lease out of Section 148, H.&T.C., A-784.

Young County

O. Bratcher's No. 1 A. C. McDonald, 150 feet south and 450 feet west of the east 80 acres of the A. C. McDonald 160-acre tract out of Section 1, C.T.R.R., A-68. Consolidated Oil Co. and Kelleher's No. 1 B. B. Colley, 150 feet south and west of the northeast corner of the north 40 acres of the E half of Section 242, T.E.&L. P. Fowler and others' No. 2 R. E. Hill-B, 900 feet south and 1,950 feet west of the NE cor., Section 195, T. E. &L., being 350 feet south and 490 feet west of the northeast corner of their 17.8-acre lease "B". P. Fowler and others' No. 3 Hill-B, 400 feet south and 830 feet west of the northeast corner of their 17.8-acre lease "B" out of Section 195, T.E.&L.

J. M. Hickey and others' No. 1 I. C. Gibbs, 150 feet south and east of the northwest corner of the I. C. Gibbs 161.5-acre tract out of Section 27, T.E. &L. Howard Petroleum Co.'s No. 1 C. J. Taack, 150 feet south and east of the NW cor. E half SW, Section 263, T. E.&L. T. F. Hunter's No. 1 G. B. Taack, 1,050 feet south and 450 feet west of the northeast corner of the east 90 acres of the G. B. Taack 159-acre tract out of Section 158, T.E.&L. Madden & Hunt's No. 3 O. Deitrich, 150 feet south and 750 feet east of the northwest corner of the north 15 acres of the Deitrich 150-acre tract out of the Stell Survey, A-256. Panhandle Refining Co.'s No. 2 J. G. Taack, 150 feet south and east of the northwest corner of the east 100 acres of the south 160 acres of Section 264, T.E.&L. Perkins & Cullum's No. 7 Deitrich, 450 feet south and east of the northwest corner of their 45-acre lease out of the Stell Survey, A-256. Petroleum Production Co. and Madden's No. 3 O. Deitrich, 150 feet south and 450 feet east of the northwest corner of the south 60 acres of the north 75 acres of the O. Deitrich 150-acre tract out of the Stell Survey, A-256. E. R. Riggs' No. 6 P. J. Keeter, 150 feet south and 750 feet east of the NW cor., Section 150, T.E.&L. Riner & Omohundro's No. 1 T. L. Richardson, 1,050 feet north and 150 feet west of the southeast corner of the west 35 acres of the J. G. Maupin Survey, A-1,483.

The Texas Company and Consolidated Oil Co.'s No. 1 J. D. Carpenter, 150 feet north and east of the SW cor. NW, Section 164, T.E.&L. United Production Co.'s No. 3 J. A. Leberman, 150 feet north and 750 feet east of the southwest corner of the west 40 acres of the north 80 acres of the south 120 acres of Section 151, T.E.&L. C. C. Williams and others' No. 2 C. J. Taack, 450 feet south and 150 feet west of the NE cor. W half SW, Section 263, T.E.&L. Wo-Mac Oil Co.'s No. 3 Stephens Roach Co., 1,-500 feet north and 450 feet east of the southwest corner of the Stephens Roach Co. tract out of Section 1, B.B.B.&C., A-35. Atlantic Oil Producing Co. and Christie's No. 1 M. R. Jarnigan, 3,700 feet southwest of the northeast line and 200 feet southeast of the northwest line of the W. J. Orrick Survey, A-217. Gordon & Morris' No. 1 H. M. Donnell, 250 feet south and 400 feet east of the most northerly northwest corner of the W. L. Donnell Survey, A-1,588.

Independent Oil & Gas Co.'s No. 1 M. R. Jarnigan, 200 feet southeast of the northwest line and 600 feet southwest of the northeast line of the southwest 50 acres of the W. J. Orrick Survey, A-217. Nash & Windfohr's No. 1 McCloud, 150 feet north and 385 feet west of the southeast corner of the J. Manning Survey, A-188. T. G. Shaw and others' No. 3 M. K. Jarnigan, 1,400 feet northeast of the southwest line and 200 feet northwest of the southeast line of the M. K. Jarnigan 43-acre tract out of the J. Conner Survey, A-27. Shell Oil Co.'s No. 1 J. Kisinger, 2,850 feet northwest of the northwest line of the Orrick Survey, A-217, 1,600 feet southwest of the southwest line of Section 3, B.B. B.&C., A-27, and located in the J. Conner, being 200 feet north and east of the southwest corner of its 61-acre lease.

Corrections

Callahan County—E. P. Campbell Oil Corp.'s No. 1 J. R. Jackson, 658 feet south and 150 feet west of the northeast corner of the west half of the W. C. Powell Survey No. 4.

Coleman County—Reeves & Riley's No. 1 M. F. Rude, 1,170 feet north and 1,170 feet west of the southeast corner of the Rude 130-acre tract of the Thomas Moffitt Survey No. 246.

Comanche County—Kain Tex Oil Co.'s No. 1 Perry, 150 feet south and 450 feet east of the northwest corner of the southeast 40 acres of the NW Section 50, Block 2, H.&T.C. Straub Oil Co.'s No. 1 Perry, at the C NW, Section 50, Block 2, H.&T.C.

Eastland County—L. Teatsorth and others' No. 1 Victoria Harbin, 160 feet south and 150 feet west of the northeast corner of the south 53 acres of the E half NE, Section 9, Block 4, H.&T.C. Same company's No. 2 Victoria Harbin, 560 feet south and 150 feet west of the northeast corner of the south 53 acres of the E half NE, Section 9, Block 4, H.&T.C. Same company's No. 3 Victoria Harbin, 910 feet south and 150 feet west

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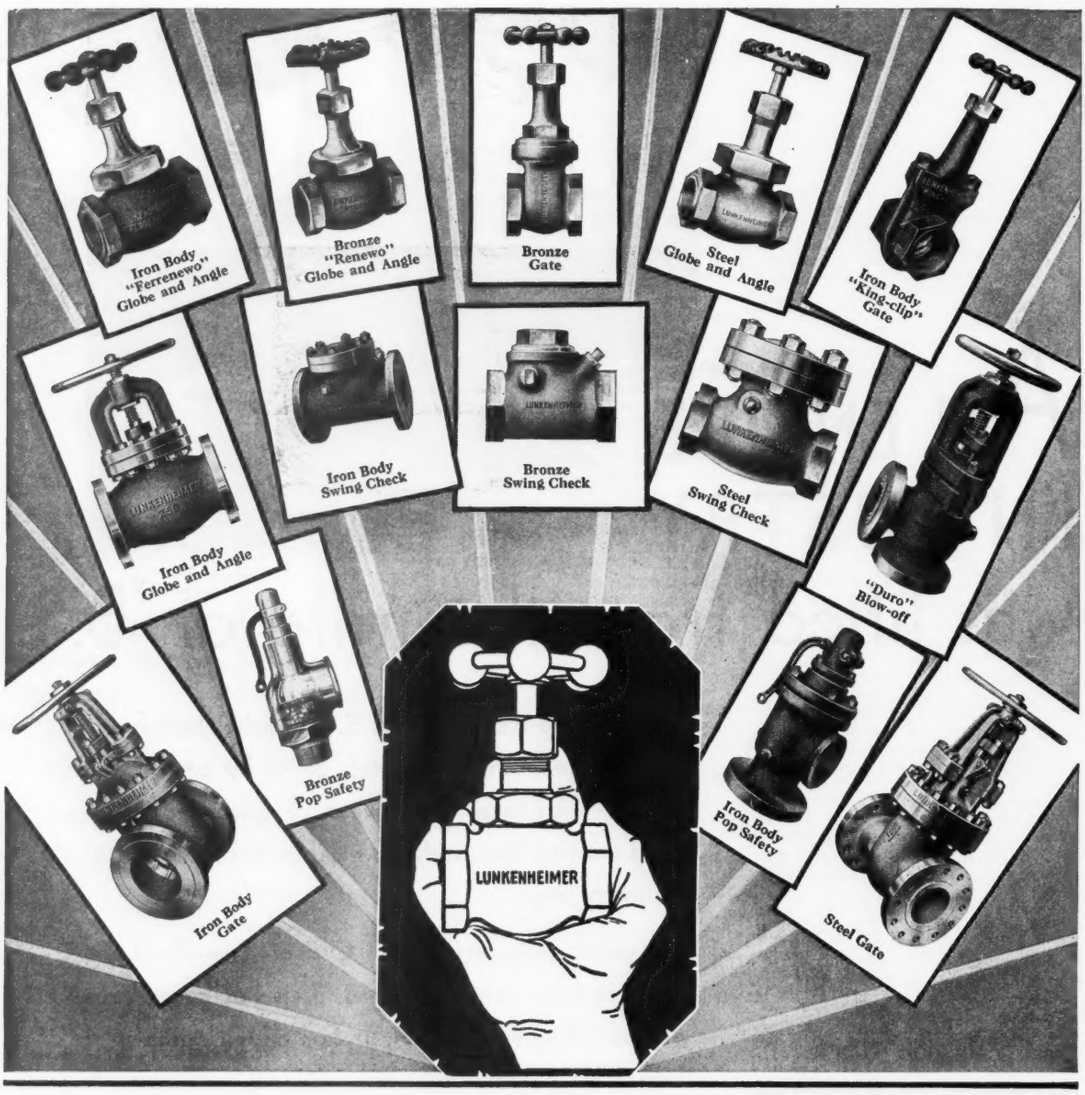

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32-66-91

of the northeast corner of the south 53 acres of the E half NE, Section 9, Block 4, H.&T.C.

Shackelford County—Albany Oil Co.'s No. 1 W. D. Reynolds-C, 2,490 feet north and 1,170 feet west of the SE cor. SW, Section 23, Block 11, T.&P.

Pecos County—Cardinal Oil Co.'s No. 1 J. H. Tippett (Pure), 437 feet south and 885 feet west of the northwest corner of the Runnels County School Land, A-2,169, and located in Section 1, D. F. Robertson Survey, A-5,187.

Ward County—Trans-Pecos Oil Co.'s No. 1 M. A. Longnecker, at the center of the southwest 40 acres of the northwest 80 acres of the northeast 320 acres of Section 206, Block 34, H.&T.C.

Wichita County—Arkansas Fuel Oil Co.'s No. 26 Kemp & Kempner-A, 150 feet south and 500 feet east of the most northerly northwest corner of Block 82, K.W.V.L., being 50 feet west of No. 5. United Production Co.'s No. 11 W. L. Hodges-A, 150 feet north and 500 feet east of the southwest corner of their 40-acre lease "A" out of the H.T.&B. Survey, A-139, being 41 feet west of No. 3.

Wheeler County—Murchison & Fain's No. 6 I. Close, at the C SW SE, Section 78, Block 23, H.&G.N.

Young County—Nimrod Oil Co.'s No. 1 W. D. Hall, 450 feet south and 150 feet west of the northeast corner of the north 60 acres of the south 100 acres of the W. D. Hall 186-acre tract out of Section 167, T.E.&L. Wise & Porterfield's No. 4 F. M. Cullers, 750 feet north and 150 feet west of the SE cor. NE SW, Section 2, C.T.R.R.

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 60)

DOUGLAS COUNTY

Steinbuckel's No. 1 Unknown, SW NE NW Sec. 34-14-21..Drlg. 400 ft.
Jenkins & Scott's No. 1 Haden, SE NW Sec. 10-12-17 ....Shut down 550 ft.

EDWARDS COUNTY

Skelly's No. 1 Johnson, NE SW Sec. 21-26-17w .....Drlg. 4,395 ft.
Barnsdall Oil's No. 1 McCarty, NW NE Sec. 31-25-17w..Drlg. 4,130 ft.
Dixie & Amerada's No. 1 McCarty, SW cor. Sec. 22-25-17w .....Drlg. 4,106 ft.

ELK COUNTY

H. F. Fleming's No. 1 Shered, NW cor. Sec. 16-29-9 ....Drlg. 1,800 ft.
Empire and Arkansas Fuel's No. 1 Record, C NW NE SE Sec. 32-30-10 .....P. B. to 1,270-1,300 ft.; cementing casing.

ELLIS COUNTY

Central Commercial Oil Co.'s No. 1 Helms, SE cor. NE Sec. 2-12-20w .....Rig.
Phillips Pet. Co.'s No. 1 Clinton, SE NW Sec. 5-12-17w..Drlg. 825 ft.
Streeter & Stearns' No. 1 Leiker, SW NE Sec. 26-13-20w..Shut down 1,290 ft.
Byrene et al's No. 1 Fisher, NW SE Sec. 4-11-20w ....Shut down 1,000 ft.
Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w .....Fishing 2,765 ft.

ELLSWORTH COUNTY

Tatlock et al's No. 1 Sackem, C SW SE Sec. 25-17-9w ..Shut down 3,228 ft.

FORD COUNTY

McNabb et al's No. 1 Fowler, C SE Sec. 26-27-22w ....Shut down 400 ft.
Swain et al's No. 1 Kenthorne, C NW Sec. 21-25-24w ..Shut down 845 ft.

GRAHAM COUNTY

Gulf Coast Oil Co.'s No. 1 Johnson, C S half Sec. 27-8-25w.Shut down 4,340 ft.
Naylor et al's No. 1 St. John, NW SE SE Sec. 27-8-25w ..Rig.

GREENWOOD COUNTY

F. Konkay et al's No. 1 Rock, NW NE NE Sec. 7-27-12..Drlg. 985 ft.

HARPER COUNTY

Beeler et al's No. 1 Bear, C NE Sec. 21-31-6w .....Shut down 1,830 ft.

HARVEY COUNTY

Superior's No. 1 Regier, SE NW Sec. 11-22-3w .....Shut down 3,680-3,727 ft.; water.
Liggett et al's No. 1 Regier, C SE NW SE Sec. 2-23-3w..Drlg. 3,632 ft.
Mrs. Gay et al's No. 1 Grove, C NW NE NW Sec. 29-23-1w .....Cleaning out 3,360 ft.

HODGEMAN COUNTY

Phillips Pet.'s No. 1 Hausman, NW NE Sec. 30-22-22w ..Drlg. 5,034 ft.

LYONS COUNTY

Sheedy et al's No. 1 Evers, C NE SE NE Sec. 4-21-10....Drlg. 1,110 ft.
Sheedy et al's No. 1 Reese, SW SE Sec. 16-20-10 .....Drlg. 2,372 ft.

MARION COUNTY

Empire O. & R. Co.'s No. 1 Black, C NE NW SW Sec. 27-19-2 .....Drlg. 2,775 ft.
Marshall et al's No. 1 Higgins, NE cor. Sec. 33-19-5 ....Rig.

McPHERSON COUNTY

Galt-Brown et al's No. 1 Zeitlow, C NE SE SE Sec. 7-17-1w .....Shut down 2,020 ft.
Dixie Oil Co.'s No. 1 Johnson, SW cor. Sec. 20-17-3w ....Drlg. 3,115 ft.
McCulloch Oil Co.'s No. 1 Cornelius, SW cor. Sec. 7-21-4..Drlg. 3,945 ft.
Kansas Oil Co.'s No. 1 Otto, SW NW Sec. 21-20-1w ....Fishing 3,480 ft.
Milmac's No. 1 Decker, NW cor. Sec. 11-20-3w .....Fishing 1,472 ft.

MORTON COUNTY

Mangle et al's No. 1 Youngren, C SE NW Sec. 24-32-42..Spudded; shut down.

MORRIS COUNTY

Urschell et al's No. 1 Scott, NE NW Sec. 6-16-6 .....Drlg. 1,940 ft.

NORTON COUNTY

Richards et al's No. 1 Colby, Sec. 17-4-21w .....Rig.

PAWNEE COUNTY

Prairie O. & G. Co.'s No. 1 Black, SW NE NE Sec. 11-20-18w .....Underreaming 6-in. csg. 3,835 ft.

PRATT COUNTY

O'Haver & Jones' No. 1 Garacke, C NE SW Sec. 7-26-14w .....Drlg. 4,160 ft.
Wilcox O. & G. Co.'s No. 1 Bappin, SW NW Sec. 7-26-15w .....Fishing 2,785 ft.

RENO COUNTY

C. A. Cheney and M. M. Valerius' No. 1 Stevens, C NE SE NE Sec. 6-26-7w .....Drlg. 500 ft.
Wilcox O. & G. Co.'s No. 1 McPheeters, SW NW Sec. 22-26-8w .....Drlg. 3,940 ft.
Witt's No. 1 Olsen, C SE NW Sec. 14-22-6w .....Drlg. 3,537 ft.
Skelly Oil Co.'s No. 1 Birkett, NE NW Sec. 30-24-7w ....Wilcox sand 4,172-96 ft.; water; shut down; total depth 4,247 ft.

RICE COUNTY

Tatlock et al's No. 1 Ploog, C SW SE Sec. 33-18-9w ....Rig.
Burgher's No. 1 Fair, C SE NE NE Sec. 14-21-10w ....Drlg. 2,660 ft.
Derby Oil Co.'s No. 1 Johnson, C NW NE SE Sec. 24-20-6w .....Shut down 3,297 ft.
Danciger et al's No. 1 Bell, C SW Sec. 16-19-8w .....Drlg. 3,175 ft.
McCullough et al's No. 1 Williams, C NE Sec. 35-20-8w..Drlg. 700 ft.

RILEY COUNTY

Grey et al's No. 1 Smith, NE SE Sec. 30-6-6 .....Shut down 1,970 ft.
Derby & Shaw's No. 1 Lindstrom, NE cor. Sec. 32-7-5e ..Shut down 2,245 ft.

ROOKS COUNTY

A. H. Kruger's No. 1 Steis, NW SE SW Sec. 12-9-16w...Shut down 570 ft.

RUSH COUNTY

Danciger Oil & Refining Co.'s No. 1 Nave, NW cor. Sec. 26-17-17w .....Total depth 3,606 ft.; shut down.
Milmac's No. 1 Mohr, C NW Sec. 11-18-16w .....Drlg. 2,690 ft.

RUSSELL COUNTY

Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w ....Spudding.

SEDGWICK COUNTY

Tavender et al's No. 1 McLean, SE SW SE Sec. 23-26-1w .....Drlg. 400 ft.
McCullough Oil Co.'s No. 1 Buckles, NW cor. SE Sec. 3-28-1w .....Shut down 1,115 ft.

(Continued on next page)

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The No. 4-A "American" individual pumping unit is equipped for either belt or direct drive. The working parts are few in number and the accurately machined gears and pinions are oil immersed. All bearings, except two, are automatically lubricated.

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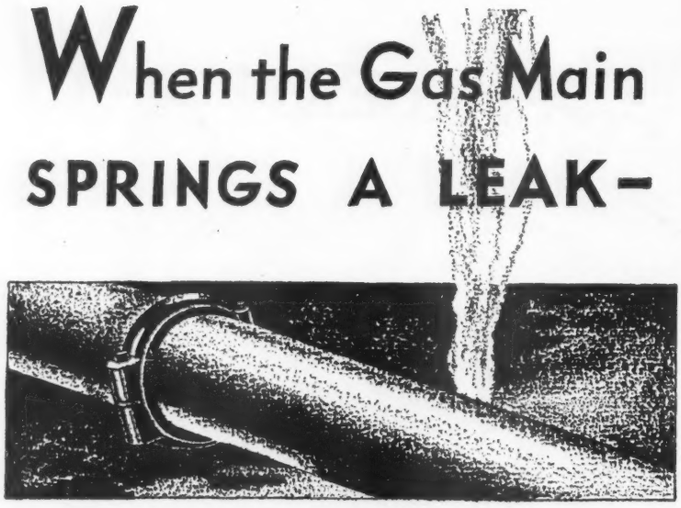

....it gets attention—*quick*.... With gas at 30c per M cu. ft., the loss is stopped in a hurry.

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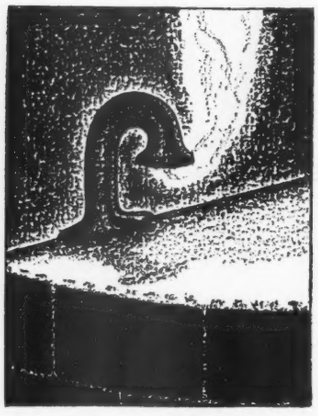

.... old fashioned vents waste gas, too. *And the cost per thousand is twice as great!* (Figuring gasoline at 7c per gallon and 12 gallons on an average per 1000 cu. ft. as it pours forth from the old fashioned vent.)

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OCECO

SHAWNEE COUNTY

Jenkins & Scott's No. 1 Sherman, NW NE Sec. 28-10-15 ..... Shut down 985 ft.
Jenkins & Scott's No. 1 Haden, NE SE Sec. 8-12-14 ..... Shut down 750 ft.

SHERIDAN COUNTY

Mandalin O. & G. Co.'s No. 1 Unknown, C SE SW SW Sec. 27-7-26w ..... Spudded; shut down.

STAFFORD COUNTY

Gibson's No. 1 Mueller, C SW Sec. 11-23-14w ..... Drlg. 3,704 ft.

STEVENS COUNTY

Argus Oil Co.'s No. 1 Armstrong, CNL S half NW Sec. 16-34-39w ..... Rig.
Argus Oil Co.'s No. 1 Parker, C SW Sec. 19-34-36w .... Drlg. 482 ft.
Argus Oil Co.'s No. 1 Smith, C SW Sec. 13-33-37w ..... Drlg. 1,041 ft.
McNabb et al's No. 1 Ramey, C SW Sec. 1-33-38w ..... Drlg. 1,480 ft.
Argus Gas Co.'s No. 1 Hobbe, C SE Sec. 17-32-37w ..... Fishing 2,625 ft.
W. Sidwell et al's No. 1 Kelly, SW cor. NE Sec. 16-34-38w ..... Shut down 1,600 ft.

SUMNER COUNTY

Hatfield's No. 1 Dauber, NE cor. Sec. 18-30-1w ..... Shut down 50 ft.
Kingwood Oil Co.'s No. 1 Stayton, C NE Sec. 18-31-2w .. Chat 3,845-70 ft.; show oil; total depth 4,361 ft.; abandoned.
Slick et al's No. 1 Peasel, NW cor. Sec. 33-31-1w ..... Chat 3,651 ft.; drilled to 3,661 ft. making 200 bbls.
Lario O. & G. Co.'s No. 1 Osborne, NE SE Sec. 21-30-1w ..... Chat 3,590-3,605 ft.; Silicious 4,-005 ft.; water; shut down.
E. K. Carey and Laredo Oil Co.'s No. 1 Welsch, SW SE Sec. 9-34-1e ..... Drlg. 3,751 ft.
Davidson et al's No. 1 Strickland, SW cor. SE Sec. 12-35-1w ..... Rig.

TREGO COUNTY

Dixie and Amerada's No. 1 Reitmayer, C NE NE Sec. 19-14-21w ..... Drlg. 3,300 ft.
Prairie Oil & Gas Co.'s No. 1 Kutina, C NE SW NE Sec. 29-15-21w ..... Drlg. 4,296 ft.
Day et al's No. 1 Gugler, SW NE NE Sec. 36-12-21w .. Shut down 50 ft.
Day et al's No. 1 Unknown, NE NW SW Sec. 2-11-21w .. Drlg. 3,820 ft.

WOODSON COUNTY

Derby & Spencer's No. 1 Kingon, CNL SE NW Sec. 29-23-15 ..... Rig.
Oko Oil Co.'s No. 1 Hougland, SW NE NE Sec. 2-24-14 .. Drlg. 1,603 ft.

WILDCAT OPERATIONS IN NEBRASKA

FRANKLIN COUNTY

U. R. Drlg. Co.'s No. 1 Brunkle (twin well), C NW SW NE Sec. 2-3n-13w ..... Rig.

CHASE COUNTY

Chase Pet. Co.'s No. 1 Ingold, C NE Sec. 24-6n-38w .... U.R. 5-in. csg.; T.D. 4,265 ft.

FURNAS COUNTY

Southwestern Pet. Corp. of Nebraska's No. 1 Montague, SE SW SW Sec. 28-1n-22w ..... Shut down 1,750 ft.
Graham Bros.' No. 1 Edwards, NW SW Sec. 13-2n-22w .. Shut down 3,250 ft.

RICHARDSON COUNTY

Norton et al's No. 1 Hauser, NE cor. Sec. 26-1-14 ..... Location.

ROCK COUNTY

North Central Dev. & Drlg. Co.'s No. 1 Leonard, SE cor. NE Sec. 14-32-18w ..... Drlg. 900 ft.

WEBSTER COUNTY

Mid-Kansas Exploration Co.'s No. 1 Platt, C SE one-half Sec. 3-1n-11w ..... Shut down 555 ft.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 58)

Daniels & LeWright's No. 1 Vandever, C SW, Sec. 15-7-1w ..... Shut down 3,130 ft.
Phillips Petroleum and T. B. Slick's No. 1 Sudick, NE cor. NE, Sec. 8-10-2w ..... Wilcox 7,716-20 ft.; water; plugging back.

COAL COUNTY

W. E. McGraw's No. 1 King, C SW NE, Sec. 11-1-8e.... Shut down 1,225 ft.

COMANCHE COUNTY

Pelwine Oil's No. 1 Howe, C SE SW, Sec. 33-1-9w..... Drlg. 1,200 ft.
G. W. Stogner's No. 1 Doebel, C SW SW, Sec. 3-3-9w.... Drlg. 500 ft.
Green et al's No. 1 Wilson, C NE SW, Sec. 14-1-12w.... Shut down 4,055 ft.

GARFIELD COUNTY

Shell Petroleum Corp.'s No. 1 Loomis, C NW NW, Sec. 32-23-4w ..... Drlg. 2,959 ft.
Continental and Barnsdall's No. 1 Brown, CNL SW, Sec. 10-20-4w ..... Drlg. 5,230 ft.
E. L. Love et al's No. 1 White, SE cor. NW, Sec. 9-24-6w ..... Shut down 5,566 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW, Sec. 1-10-6w.. Drlg. 2,905 ft.
J. M. Henry et al's No. 1 Abraham, SE cor. NW, Sec. 4-5-8w ..... Rig.

GRANT COUNTY

Gypsy Oil Co.'s No. 1 Belderbeck, C SE SE, Sec. 27-28-7w. Wilcox 5,647 ft.; drlg. 5,785 ft.
Baucher et al's No. 1 Deadman, SW SE, Sec. 12-28-4w.. Shut down 4,737 ft.
Cowden et al's No. 2 Vollmer, CEL NE SW, Sec. 22-25-4w. Shut down 5,640 ft.
Otstot's No. 1 Tabor, C NE NE SE, Sec. 23-26-3w..... Drlg. 3,935 ft.

GARVIN COUNTY

Nelson et al's No. 1 Strickland, NE SW, Sec. 10-4-3..... Drlg. 300 ft.
Pickham-Harris' No. 1 Community Gaines, C NW NE, Sec. 11-4-1 ..... Shut down 3,290 ft.

GREER COUNTY

Helmerich & Payne's No. 1 Henck, NW cor. Sec. 23-6-24w ..... Fishing 2,240 ft.
I. T. I. O. et al's No. 1 Fee, C SW NE, Sec. 17-6-24w..... Shut down 2,100 ft.

HARMON COUNTY

Harmon-Tex Oil Co.'s No. 1 Hoadley, NE cor., Sec. 17-4-24w ..... Cleaning out 700 ft.
S. M. Stauffer's No. 1 Castleman, SW NE, Sec. 8-4-26w.. Shut down 625 ft.

HARPER COUNTY

Empire's No. 1 Bruce, C NE SW, Sec. 12-25-20w..... Rig.
Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW, Sec. 14-26-24w ..... Drlg. 7,535 ft.; 6⅝-in. csg.

HASKELL COUNTY

Mid-Western's No. 1 Posester, C NE SE, Sec. 33-10-22.. Drlg. 60 ft.
Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e ..... Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE SW, Sec. 10-9-18e.. Shut down 2,387 ft.
Sanboise Gas' No. 1 Unknown, SW NW SE, Sec. 32-9-21e.. Shut down 2,100 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW, Sec. 15-5-11..... Rig.
Canady et al's No. 1 Kanard, NW SW, Sec. 29-9-12..... 1,000,000 ft. gas 2,284-90 ft.; total depth 2,815 ft.; shut down.
Irwin et al's No. 1 Jones, SE NW, Sec. 30-5-10..... Rig on ground.

KAY COUNTY

Skelly and Empire's No. 1 Maple, SW cor., Sec. 20-27-4.. Drlg. 935 ft.

KINGFISHER COUNTY

Superior Oil Co.'s No. 1 Story, SE cor., Sec. 25-19-5w.... Fishing 6,285 ft.
Galt Brown's No. 1 Wolf, NW SE, Sec. 6-16-7w..... Shut down 6,015 ft.

KIOWA COUNTY

Merrick Oil Co.'s No. 1 Kelly, NW cor. SE, Sec. 20-7-17w. Shut down 1,525 ft.

LEFLORE COUNTY

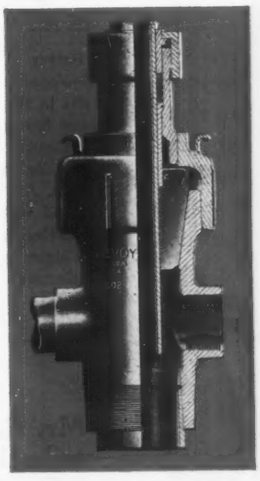
Red Bank Oil Co.'s No. 1 Fee, SE SW NW, Sec. 23-9-24.. Total depth 5,440 ft.; 15,000,000 ft. gas; fishing 5,488 ft.

(Continued on next page)

HELL *Hath no Fury Like a Wild Well's Scorn!*

Consider the thousands of dollars invested in a well in drilling equipment, in pipe, in casing, in labor, in overhead. Yet all of this may be endangered through a little false economy in not properly controlling the well. The future production of the well may be seriously curtailed by letting a well get out of control. Many drillers have learned to their own amazement and to the disfavor of their employers that "Hell hath no fury like a wild well's scorn."

McEVOY *Universal Casing Control Head Protects Well . . .*



When used as a drilling control head with main body mounted in casing and with Automatic Safety Pressure Head Attachment close at hand, you need have little fear of the fury of gas pressure.

The drill stem can be raised to the nearest coupling or tool joint below the head, and the Automatic Safety Pressure Head dropped into place. It locks itself at once. The weight of the drill stem resting on it makes a pressure tight joint.

While seated in the spider, pump pressure may be applied to hold down gas pressure. After pressure subsides, the safety pressure attachment may be quickly removed and drilling resumed. The Automatic Safety Pressure Head may be used at any time during the drilling to force the mud into any loose sand or caving strata.

The McEVOY UNIVERSAL CASING CONTROL HEAD is truly "universal." It meets every need of the top of the well from "drilling-in" to "pumping."

Write for descriptive folder.

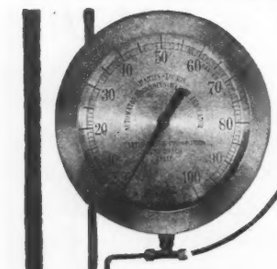
LOS ANGELES
Mar. 16 to 23, 1930

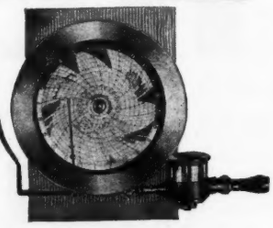
J. H. McEVOY & COMPANY

HOUSTON, TEXAS, U.S.A.

Pacific Coast Branch: McEVOY SCREEN PIPE CO., 2428 E. 56 St., Los Angeles, Calif.

MARTIN-DECKER AUTOMATIC RECORDING WEIGHT INDICATOR





The Deepest Well

In The World

9350 Feet Deep

Oscar R. Howard's Hathway No. 7, Santa Fe Springs, California

The Drilling Crew With Superintendent M. L. Barough in Front of Their DEPENDABLE Weight Indicator.

Over 90% of All

Rotary Equipped Wells in the United States and Canada Drilling Below 2500 ft. Are Equipped with Martin-Decker Weight Indicators

Reading from right to left the men in the picture are:

M. L. Barough, Superintendent.
Geo. Bower, Driller.
Frank Sherman, Derrickman.
Fred Angelton, Cathead.
Chas. Eckland, Helper.
Jessie Nusko, Helper.

Mr. Barough says: "The Weight Indicator is the strongest contributing mechanical factor in making holes STRAIGHT and DEEP. We had no serious fishing jobs on this hole."

MARTIN-DECKER CORPORATION

Formerly

Martin-Loomis Corporation

Mid-Continent Distributors
Reed Roller Bit Company
Houston, Texas

3433 Cherry Ave.,
LONG BEACH
CALIFORNIA

Foreign Distributors
Oil Well Supply Company
Pittsburgh, Pa.

WEIGHT RECORDING, MEASUREMENT AND CONTROL

LATTIMER COUNTY

Limestone O. & G. Co.'s No. 1 Shaw, NW cor. NE NW, Sec. 23-5-18e ..... Underreaming 1,700 ft.

LINCOLN COUNTY

Tom Slick Oil Co.'s No. 1 Hammer, SE NW NW Sec. 35-16-2 ..... Rig.

LOGAN COUNTY

Currier's No. 1 Young, C SW NE SW, Sec. 34-17-4w.... Rig.
Haley & Smith's No. 1 Guier, SE cor. SW, Sec. 33-18-3w. Shut down 3,970 ft.

McCLAIN COUNTY

Sunray Oil's No. 1 Newsome, C SE NE NE, Sec. 16-5-3.. Drlg. 3,818 ft.

McINTOSH COUNTY

T. C. Young's No. 1 Derrison, Sec. 3-12-15 ..... Shut down 1,275 ft.
Jennings Brothers' No. 1 Crabtree, NW SW NE, Sec. 31-10-14 ..... Drlg. 4,300 ft.
Patterson et al's No. 1 Smith, SW cor. NW SE, Sec. 32-9-16 ..... Shot 240 qts. 5,446-5,559 ft.; shot went off up hole; fishing.

MUSKOGEE COUNTY

Sioux Oil Co.'s No. 1 Unknown, NW SE, Sec. 21-11-19.. Shut down 1,011 ft.

NOBLE COUNTY

Gypsy Oil Co.'s No. 1 Bergstrom, SE NE, Sec. 28-22-1w.. Drlg. 796 ft.
Peerless et al's No. 1 Wentz, NW SW, Sec. 22-22-1..... Drlg. 3,279-3,310 ft.; flowed 110 bbls.

OKFUSKEE COUNTY

Irwin et al's No. 1 Davis, SE NW, Sec. 16-13-9..... Drlg. 1,100 ft.
Henry Oil Co.'s No. 1 Harjo, Sec. 36-12-9..... Shut down 2,795 ft.
E. L. Robinson's No. 1 Rice, NW, Sec. 2-10-9..... Location.
Shepard et al's No. 1 Neveas, SE NW SW, Sec. 3-12-10.. Shut down 3,661 ft.

OKLAHOMA COUNTY

Cromwell-Franklin's No. 2 Thompson, SW NE Sec. 15-12-3w ..... Rig.
Warr et al's No. 1 Castle, SW NW, Sec. 20-11-3w..... Rig.
J. F. Cuniff, trustee's No. 1 Church Land, NE SW SE, Sec. 17-12-4w ..... Drlg. 3,744 ft.
Magnolia and Ramsey's No. 1 Johnson, C NE SW, Sec. 35-13-3w ..... Drlg. 4,815 ft.
Ryan Consolidated's No. 1 Lawton, NE NW, Sec. 3-11-2w. Drlg. 4,750 ft.
Tom Slick Oil Co.'s No. 1 Martin, C NW NW, Sec. 13-13-1w ..... T. D. 6,971 ft.; water; plugging back 6,871 ft.
Hall & Briscoe's No. 1 Holmes, NE cor. SW SE, Sec. 10-11-3w ..... Drlg. 4,329 ft.

OSAGE COUNTY

Kay County Gas' No. 1, C N half NE, Sec. 28-24-4..... Drlg. 1,535 ft.
Continental Oil Co.'s No. 1, NW SE SE, Sec. 24-24-5..... Drlg. 1,890 ft.

PAWNEE COUNTY

Shaffer O. & R. Co.'s No. 1 Jones, SW NE, Sec. 22-20-5.. Location.
Cochran et al's No. 1 Green, NE cor. SW, Sec. 15-23-5... Rig.

PITTSBURG COUNTY

Empire O. & R. Co.'s No. 1 Williams, C NE SE, Sec. 33-7-16e ..... Shut down 3,975 ft.

POTTAWATOMIE COUNTY

Keister & Manning's No. 1 Rowlett, SW SE NE, Sec. 30-8-4 ..... Drlg. 4,468-80 ft.; swab and flowed 420 bbls.
Payne Drlg. Co.'s No. 1 Bullock, SE NE, Sec. 22-6-3..... Fishing 4,150 ft.

ROGER MILLS COUNTY

Bucy & Stone's No. 1 Williams, C SW, Sec. 23-12-24w... Shut down 600 ft.
L. C. Hivick's No. 1 Davis, C NW NE, Sec. 4-11-26w.... Drlg. 3,000 ft.

SEMINOLE COUNTY

Magnolia and Twin State Oil Co.'s No. 1 Harns, SW NE NE Sec. 8-5-6 ..... Rig.
Producers & Refiners' No. 1 Factor, NW SW, Sec. 30-6-6. Drlg. 1,870 ft.
Independent Oil & Gas Co.'s No. 1 Johnson, C NE NE, Sec. 33-9-8 ..... Drlg. 2,460 ft.
Prairie Oil & Gas Co.'s No. 1 Anders, NW cor., Sec. 23-6-6 ..... Drlg. 2,340 ft.
Superior Oil Co.'s No. 1 Morgan, SE cor., Sec. 19-6-6..... Drlg. 2,426 ft.
Magnolia's No. 1 Webster, NE SE NW, Sec. 31-6-8..... 120 bbls. 12 hours 2,656-71 ft.; completed.
Sunray Oil Co.'s No. 1 Sunday, NW SE, Sec. 35-5-5..... Location.

WASHITA COUNTY

Southern Inv. Co.'s No. 1 Musie, NW cor. Sec. 10-9-20w.. Rig.

WOODS COUNTY

Peerless O. & G. Co.'s No. 1 Crowell, C NW NE Sec. 23-28-16w ..... Drlg. 4,440 ft.
Gypsy-Prairie et al's No. 1 Thompson, SE cor. SW, Sec. 10-25-15w ..... Fishing 6,104 ft.
Sinclair Oil & Gas Co.'s No. 1 Showwalter, C SW SW, Sec. 33-27-16w ..... Drlg. 6,750 ft.

WOODWARD COUNTY

Farrond et al's No. 1 Unknown, SE cor. SW SE, Sec. 2-23-17w ..... Shut down 1,387 ft.
Prairie Oil & Gas et al's No. 1 Wilbur, NE cor. NW, Sec. 22-23-17w ..... Drlg. 6,150 ft.
Billy's Oil Co.'s No. 1 Watt, C SE, Sec. 9-23-20w..... Abandoned 5,616-60 ft.; water.
Burgoyne Brothers' No. 1 Merkins, SW cor. SE NE, Sec. 15-21-19w ..... Shut down 1,910 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Bryant-Croxton's No. 1 Mason, NW NE NW, Sec. 4-1s-14. Shut down 1,493 ft.
Bookshire's No. 1 Guinn, NW cor., Sec. 18-3s-10..... Shut down 100 ft.

BRYAN COUNTY

Johnson et al's No. 1 Ussery, SE SW SE Sec. 14-6s-7e... Location.
Slab Oil Co.'s No. 1 Ryle, NW SE SE, Sec. 27-6s-7..... Spudding.
Marshall's No. 2 Fee, C SW SE NW, Sec. 28-5s-7..... Shut down; 6-in. csg. 265 ft.
Yale Oil Syndicate's No. 1 Craige, C NW NE, Sec. 36-9s-9e ..... Drlg. 2,157 ft.

CARTER COUNTY

Campen-Lasater Co.'s No. 1 Anderson, NE cor. SE NE SE, Sec. 32-4s-2 ..... Fishing 1,980 ft.

CHOCTAW COUNTY

Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW, Sec. 15-6-19e ..... Shut down 1,346 ft.

COMANCHE COUNTY

Pelwin Oil Co.'s No. 1 Tafepirdy, C NW NE NE, Sec. 5-1s-9w ..... Location.

COTTON COUNTY

Empire O. & R. Co.'s No. 1 Chambers, NW SE, Sec. 8-3-9w ..... Rig.
American Ref. Co.'s No. 1 Miller, SE SW, Sec. 9-5s-12w.. Shut down 2,158 ft.
T. Medlin's No. 1 Johns, SW SE, Sec. 8-2s-9w ..... Drlg. 2,300 ft.

JEFFERSON COUNTY

Roy Johnson's No. 1 Pettett, NE cor. Sec. 10-4s-4w .... Drlg. 1,200 ft.
Hart's No. 1 Standfield, C W half NE SE, Sec. 33-7s-6w. Drlg. 1,017 ft.

JOHNSTON COUNTY

N. A. Neff's No. 1 Chapman, C SW NW, Sec. 20-4s-5..... Location.

LOVE COUNTY

Gilcrease Oil's No. 1 Burkheart, NE NW, Sec. 13-6s-1... Rig.

MARSHALL COUNTY

Golden Rule Oil Co.'s No. 1 Reeves-Gray, C NW SE NE, Sec. 19-6s-6 ..... Drlg. 400 ft.

McCURTAIN COUNTY

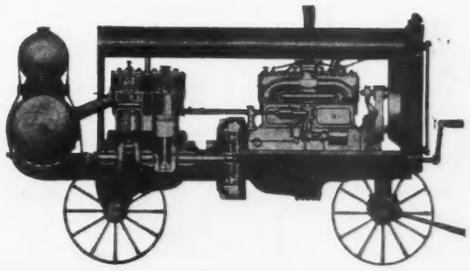
Milton et al's No. 1 Vase, SW NW, Sec. 26-6s-21..... Shut down 2,287 ft.

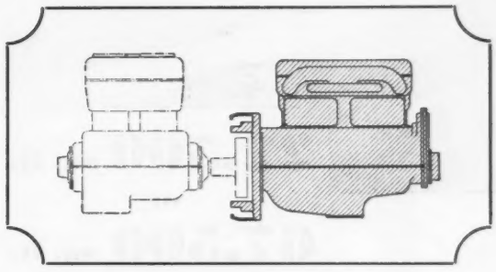
STEPHENS COUNTY

Wirt Franklin Petroleum Corp.'s No. 1 McPhail, NW SE, Sec. 1-2s-7w ..... Drlg. 1,400 ft.
Smythe et al's No. 1 Johnson, NE cor., Sec. 30-2-8w.... Swabbing 2,476-87 ft.; to test.

TILLMAN COUNTY

Bridwell Oil Co.'s No. 1 Rutherford, NE SE Sec. 11-4s-16w ..... Rig.
Flake's No. 1 Barba, NE SE NE SE, Sec. 19-1s-16w.... Shut down 832 ft.
Allen Brothers' No. 1 Howell, SW NE, Sec. 13-1-17w.... Drlg. 310 ft.
Nance et al's No. 1 Massie, NE NW, Sec. 36-18-6w..... Location.
Landfair et al's No. 1 Smith, SE SW SE, Sec. 6-2s-16w.. Shut down 2,535 ft.





Engine starts without compressor load!

Why Schramm is preferred

1. Operated by vertical cylinder heavy duty Buda Engines.
2. Compressor parts are interchangeable.
3. Greater capacity per dollar invested.
4. Heavy-duty self aligning Clutch.
5. Engine starts without compressor load.
6. Visible Gasoline Strainer.

WHEN you crank the ordinary Portable Compressor engine with the solid coupling, both engine and compressor must be turned over in starting. Think of the effort required—especially in cold weather when the oil is stiff and hard.

No such starting trouble with the Schramm. Note the sketch above of the Schramm Clutch Coupling. You can start the Schramm engine separately, and get it warmed up for full load operation before taking the compressor or air load.

Look over the other features of the Schramm listed here and send for the 1928 Schramm Catalog.

SCHRAMM, INC.
West Chester, Pa.

Offices and Representatives in All Important Cities

Schramm Inc.

22,500 sq. ft.
or
67,500 sq. ft.
of
Roofing

THE average flowing plant being built today is about 75 ft. wide x 300 ft. long, with a roof area in excess of 22,500 sq. ft.

Such a roof made of Granite City Copper Bearing Sheets has a life three times as long (according to laboratory and service tests) as one roofed with ordinary sheets. In other words, 22,500 sq. ft. of Granite City Steel Sheets should last as long as the 67,500 sq. ft. of sheets without copper content required to re-roof twice.

You may not need this extra margin of protection. But since it costs only about 10% additional, isn't it good business to have this added insurance against corrosion?

Circles, semi-circles and plates in corrosion-resisting copper bearing steel if desired. Three times the life of ordinary steel.

29 railroads and the Mississippi River assure excellent service to jobbers and fabricators in the Mississippi Valley, the West and the Southwest. Shipment from mill at Granite City, Illinois—20 minutes from Saint Louis.

Tank Steel

Chicago ▾ Dallas ▾ Kansas City ▾ Los Angeles ▾ Memphis
St. Louis ▾ St. Paul ▾ Seattle ▾ San Francisco ▾ Salt Lake City

GRANITE CITY STEEL CO. GRANITE CITY ILLINOIS

Galvanized. Blue Annealed and Black Sheets - Plates and Tin Plate

SINCE 1878 GRANITE CITY SHEETS

Available in Regular or Copper Bearing Steel

SUMMARY OF CALIFORNIA OPERATIONS, JANUARY, 1930

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for January amounted to 21,983,242 bbls., an average of 709,137 bbls. per day. This is an increase of 8,958 bbls. per day over December production.

Total stocks of crude and all products in Pacific Coast territory increased during the month 1,530,390 bbls. The total stocks at the end of the month were 185,927,481 bbls. Due to correction by a reporting company the following stock revisions as of December 31, 1929, are necessary: Heavy crude and fuel decreased 401,938 bbls., all other stocks increased 796,913 bbls., and total all stocks increased 394,975 bbls.

Seventy-seven wells were completed during the month with an initial daily production of 103,661 bbls., compared with 71 wells completed during December, with an initial production of 103,836 bbls.

PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

District	Barrels Per month	Daily average Jan., 1930	Dec., 1929	Jan., 1929
Kern River	628,619	20,278	17,620	18,079
Mount Poso	389,638	12,569	11,369	94
Fruitvale	97,424	3,143	3,063	865
Round Mountain	87,193	2,813	2,530	41
McKittrick	147,969	4,773	4,806	4,960
Midway-Sunset	2,256,593	72,793	73,677	72,417
Elk Hills	519,720	16,765	16,589	19,064
Lost Hills-Belridge	155,212	5,007	4,648	4,360
Coalinga	285,,941	9,224	9,467	9,673
Kettleman Hills	402,842	12,995	9,379	4,016
Wheeler Ridge	19,116	617	639	774
Watsonville	1,938	64	63	63
Santa Maria	111,369	3,593	3,769	4,913
Capitan	....	....	....	....
Summerland	13,518	436	459	122
Elwood-Goleta	915,293	29,526	31,767	16,688
Santa Barbara	3,045	98	138	....
Rincon	107,818	3,478	3,256	3,572
Ventura Avenue	1,605,932	51,804	50,918	54,153
Ventura-Newhall	159,002	5,129	4,938	5,664
Los Angeles-Salt Lake	49,656	1,602	1,527	1,497
Whittier	45,762	1,476	1,527	1,569
Fullerton (Brea Olinda)	409,485	13,209	14,051	14,233
Coyote	354,833	11,446	11,119	12,421
Santa Fe Springs	5,302,294	171,042	167,519	153,538
Montebello	266,513	8,597	9,087	11,001
Richfield	437,256	14,105	14,727	18,112
Huntington Beach	1,272,412	41,046	41,533	48,035
Long Beach	3,297,792	106,380	104,974	181,775
Torrance	391,324	12,623	12,625	14,866
Dominguez	332,608	10,729	10,429	10,252
Rosecrans	215,220	6,943	7,133	7,172
Inglewood	681,191	21,971	22,339	26,899
Newport	1,240	40	30	55
Seal Beach	930,489	30,016	30,125	31,879
Potrero	23,791	768	756	773
Lawndale	22,134	714	773	790
Playa Del Ray	41,060	1,325	810	....
Total	21,983,242	709,137	700,179	754,385
Total December	21,705,554	700,179	....	....
Increase	277,688	8,958	....	....

STOCKS

	Jan. 31, 1930	Dec. 31, 1929†	Jan. stock increases	Jan. 31, 1929
Heavy crude, heavier than 20° A. P. I., including all grades fuel	112,654,215	†113,019,378	*365,163	99,869,306
Refinable crude, 20° A.P.I., and lighter	42,068,114	41,469,458	598,656	20,118,007
Gasoline	17,799,026	16,432,842	1,366,184	12,067,326
Naphtha distillates	3,281,669	3,327,035	*45,366	1,644,474
All other stocks	10,124,457	†10,148,378	*23,921	9,921,944
Total all stocks	185,927,481	†184,397,091	1,530,390	143,611,057

*Decrease. †Revised.

DEVELOPMENT

	New rigs up	Active drilling	Completed	Daily initial output	Active Producing	Abd. wells Drillers	Abd. wells Producers
Kern River	2	4	2	325	971	..	1
Mount Poso	2	1	1	100	69	..	..
Fruitvale	..	2	1	225	13	..	3
Round Mountain	..	1	2	550	14	1	..
McKittrick	..	2	..	....	282	..	..
Midway-Sunset	6	27	13	8,259	2,118	..	2
Elk Hills	..	..	..	....	211	..	..
Lost Hills-Belridge	..	3	..	....	337	..	..
Coalinga	..	4	..	....	749	..	1
Kettleman Hills	1	14	2	2,900	4	..	1
Buttonwillow Gas Field	1	2	..	....	7	..	..
Wheeler Ridge	..	..	..	....	33	..	..
Watsonville	..	..	..	....	7	..	..
Santa Maria	..	5	..	....	211	..	..
Summerland	1	2	1	75	97	..	..
Capitan	3	5	1	130	1	..	..
Elwood-Goleta	1	3	2	7,000	24	1	1
Santa Barbara	..	..	..	....	1	3	1
Rincon	1	5	..	....	31	..	..
Ventura Avenue	3	26	4	6,542	144	..	1
Ventura-Newhall	6	23	2	167	470	1	..
Los Angeles-Salt Lake	..	..	..	....	311	..	..
Whittier	..	1	..	....	168	..	1
Fullerton	..	1	..	....	368	..	..
Coyote	..	2	1	1,000	210	..	..
Santa Fe Springs	1	125	30	69,479	412	..	5
Montebello	..	1	..	....	177	1	..
Richfield	1	4	3	280	298	1	2
Huntington Beach	..	3	3	500	560	..	2
Long Beach	10	64	7	4,809	935	..	1
Torrance	..	..	..	....	593	..	4
Dominguez	1	2	..	....	59	..	..
Rosecrans	..	..	1	1,000	163	1	7
Inglewood	1	1	..	....	225	..	..
Newport	..	1	..	....	4	1	1
Seal Beach	..	2	..	....	151	..	1
Potrero	..	6	1	320	10	1	1
Lawndale	..	..	..	....	7	..	..
Playa Del Ray	2	1	..	....	1	..	..
Miscellaneous drilling	13	151	..	....	....	19	..
January	56	494	77	103,661	10,386	30	35
December	67	558	71	103,836	10,515	23	13
Decrease	11	64	*6	175	129	*7	*22
Average for year 1929	109	610	76	100,625	10,550	26	18
Average for year 1928	107	520	59	56,802	10,823	15	25
Average for year 1927	97	404	75	39,992	11,276	23	21
Average for year 1926	95	422	76	32,635	11,288	24	17
Average for year 1925	105	417	79	42,247	11,393	28	12

* Increase.

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has been impregnated with the preservative to a depth of one-half inch in every portion of the pole
in that area between the plane designated as the height of treatment to a plane three feet below
the height of treatment, unless the sapwood is less than one-half inch in thickness, in which case
the impregnation is to the full depth of the sapwood.
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show the penetration as herein specified.
This guarantee is effective provided only the attached coupon is signed and returned to Page &
Hill Co., at Minneapolis, Minn., within five days from the date shipment arrives at destination and
that any claim for refund under this guarantee is filed with Page & Hill Co., at Minneapolis, Minn.,
within thirty days thereafter.
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By
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VALVES & FITTINGS

CENTRAL WEST FIELDS

(Continued from Page 77)

Bode and others' No. 34 Hiram McCroy, Lot 31, is rated a 5 bbls. from the first Cow Run sand from 418-63 feet. William Brothers have a very good gas well on the Levia E. Moran, Section 16, Penn Township, in the lower Cow Run sand from 723-35 feet.

Emerald Petroleum Co.'s No. 6 James A. Little, Section 8, Fallsburg Township, Licking County, produced an initial of 65 bbls. from 2,792-2,849 feet. In Union Township, Muskingum County, the Athey Co.'s No. 1 Maud Shepherd, Section 24, was dry, and the same company's No. 1 H. E. Elliott, Section 16, Rich Hill Township, same county, was good for 4 bbls.

INDIANA

Two completions were reported from the southwestern or Princeton Field of Indiana, where the Mahutska Oil Co. and others' second well, 250 feet from the south line and 2,240 feet from the west line of the Ford-Hill farm, NW, Section 31, Clay Township, Pike County, produced 32 bbls. initial, top of sand at 1,290 feet and drilled to a total depth of 1,305 feet. In the same township, Roger A. Lee and others' second test, 225 feet from the north line and 1,000 feet from the east line of the Charles McAtee, SE, Location 146, came in a light gas producer. Top of sand found at 1,353 feet and the gas at 1,370 feet. No. 3 is drilling on the Ford-Hill farm, Section 31, for the Mahutska Oil Co. and others. Charles C. Taliaferro, Jr., is drilling No. 4 Mary McAtee farm, Section 12, same township, and Roger A. Lee and others are working at No. 3 Charles McAtee farm. In Washington Township, same county, McNaughton and others are drilling on the D. Morrison, Section 30.

In Gibson County, Washington Township, the Ohio Oil Co. abandoned old No. 4 W. C. Deffendoll farm, Section 6. Big Four Oil & Gas Co. is starting a test on the C. T. Sloan, Section 18.

Ross and others are starting a test on the Ross farm, Section 32, Veale Township, Daviess County.

Siosi Oil Corp. is drilling a purely wildcat on the Anna E. Goodman farm, Section 23, Sugar Creek Township, Vigo County, in hopes of finding good production similar to that found by the company in Prairie Creek Township, same county.

ILLINOIS

The Illinois Field shows an improvement over the past few weeks in new completions, especially in the shallow area in Sugar Loaf Township, St. Clair County, south of East St. Louis. The Ohio Oil Co.'s No. 24 Matilda Dryoff, Section 28, on the west end of the lot, produced 105 bbls. initial, from 460 to 508 feet. Same company's No. 4 Phillip Frye, in Section 34, Survey No. 430, produced 30 bbls. from 597 to 648 feet. Same company is drilling a test on the Mathias Koch, at Fayetteville, Section 35; No. 2 J. A. Reichert, Section 27, and No. 5 Phillip Frye, Section 34. St. Clair County Oil & Gas Co.'s No. 2 Fred Metler, SE, Section 34, pumped 35 bbls. initial. James C. Ellis abandoned No. 1 Charles LaCroix, NE, Section 28, Sugar Loaf Township, and Thomas Whalen did the same with No. 1 A. Shock, Lot 20, Section 21, Dupo Townsite. Ellis and Thomas are drilling No. 1 on the Sophia Pittman, same township.

In the old Illinois Field, in Crawford County, Prairie Township, M. Watson and others' test, in the northeast corner of the E. E. Barrett, NW, Section 13, pumped 25 bbls. initial from 870 feet, and the O. R. Oil & Gas Co.'s No. 2, in the northwest corner of the Noah Gray, NW, Section 1, pumped 20 bbls. from 920 feet.

John Phipps and another struck another nice Stray sand producer in No. 9 well, 530 feet from the south line and 200 feet from the east line of the J. W. Clark, SW, Section 2, Dennison Township, Lawrence County, which produced 130 bbls. initial. Top of the Stray sand found at 746 feet and pay from 768 to 772 feet.

In the Allendale Field, Wabash Township, Wabash County, Jose S. Young and others' test, in the northwest corner of the John Stillwell, SW, Section 26, developed into a dry hole at 1,535 feet. This well was drilled in the hopes of finding a gas producer. Same parties abandoned No. 3 Winnie Sparks, same section. W. C. McBride, Inc., is drilling No. 8 J. H. Cisil, Section 24, and the Mack Oil Co. is starting No. 10 on the Holson-Dorney, Section 18. In Friendsville Township, same county, W. L. Bell and others' No. 5 H. C. Yelton farm, Section 5, showed both oil and gas, but was spoiled with a shot, according to advice.

The wildcat drilled by the Texas Federal Loan Co., 890 feet from the south line and 250 feet from the east line of the F. Nigh farm, in Wade Township, Jasper County, was dry at 2,202 feet.

KENTUCKY-TENNESSEE

(Continued from Page 77)

Jett, and No. 14, same farm, produced 35 bbls. from the Barlow sand.

Tracey Supply Co. has what is reported a 30-bbl. initial producer from the Barlow sand on the R. M. Hunt farm, near Pleasant Ridge.

Daviess County Wells

The Standard Oil Co. of Kentucky drilled a deep test on the Hunter Bell farm, in the Panther Creek Flats, of Daviess County, but failed to find commercial production at 1,790 feet, and gave it up as a dry hole. Had this well proven a producer of value, it would have been a big extension for the Owensboro Field.

Northeast of Whitesville, Rhodes and others found a duster on the J. Frank Bruner farm, and west of the Jones Pool, same county, Jess G. Watts found a regular Daviess County dry hole.

Creek Drilling Co. struck a good gas producer in No. 1 on the W. Huebner farm, in the Utica Pool.

Ben F. Wright and others' second test on the Goldie Ambrose 234 acres in the Cane Run area, is reported showing for 20 bbls.

North of the Barnetts Church Pool the Ohio Oil Co. is said to have found a dry hole on the Taylor farm.

In the Utica Field, the Petroleum Exploration Co.'s No. 4 on the J. M. Clark farm, is a 40-bbl. producer, while its test on the Edward Bennett farm, and No. 1 on the J. S. Huff farm, were both dry.

Southeast of Owensboro, along the Hartford Highway, C. E. Daugherty drilled a dry hole on the W. L. Taylor 122 acres, also found a dry hole in No. 1 on the Harrison Brothers farm.

Phelix Miles drilled a duster on the James Woods farm, in the Red Hill Field, while Evans, Garrison and others' No. 10 on the Davis heirs 109 acres, same pool, produced 50 bbls. initial.

Scattered Wells

A. S. McClintock and others' No. 3 on the Hancock Land & Development Co.'s lands, in the Pellville Field of Hancock County, after given a shot, was light, around 5 bbls.

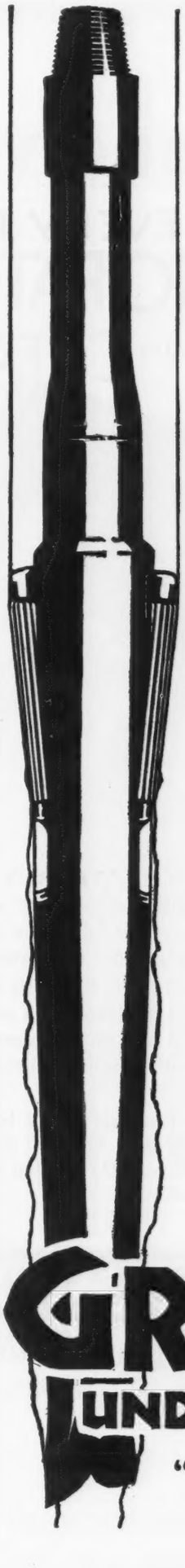
In the Niagara Field of Henderson County, the Missouri-Kansas Pipe Line Co. got what gauged 750,000 feet of gas.

In Knox County, in the eastern part of Kentucky, Oklahoma parties struck a nice gas flow at 400 feet on the Gilliam farm. This is in the Barboursville area.

After fishing for several months the tools have been recovered in Ellis, Young and others' test on the Edward Tett farm, in the Greenville Field of Muhlenberg County, and have what is reported a showing for 40 bbls. in what is called the McCloskey formation.

Field Pickups

A well of importance that is drilling in the northwestern part of McLean County, about 2 miles northwest of the town of Beach Grove, is down to 3,600 feet, and a new machine is being moved to the location by the Missouri-Kansas Pipe Line Co., which will drill it to 5,000 feet unless production is found, which would make it the deepest hole yet drilled in Kentucky. Beech Grove is a



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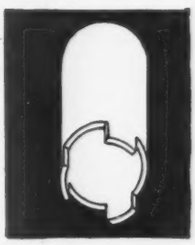

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short distance northeast of Sebree and south and a little east of Henderson, and southeast of the Niagara Field of Henderson County.

In shooting the Bed Rock Oil Co.'s well on Pigeon Creek in Johnson-Magoffin Counties in the eastern area of Kentucky, a premature explosion parted 200 or so feet of cable, dropping the tools in the hole. It had a nice gas volume.

In Clay County, in the eastern part of the State, the Petroleum Exploration Co. made a location on the Begley Coal Co.'s 1,553 acres.

The reappointing of Dr. Willard Rouse Jillson, as state geologist of Kentucky, is good news to the oil people of the State. His reappointment was confirmed without dissenting vote.

KETTLEMAN HILLS STIRS GRAVE CONCERN

(Continued from Page 130)

tance of a little more than 30 miles, contains three separate domes, two of which have perfect closure on all sides.

Prolific Production Proved Up

The Milham Exploration Co. and the General Petroleum, a subsidiary of the Standard Oil Co. of New York, have definitely proved up the existence of prolific production over an area of large extent. The former's No. 1 Kennedy in section 28-21-17, located approximately 2 miles north of the discovery well, has not actually been put on a production test owing to conservation work but no one who has seen the cores from this project doubts that a substantial producer can be brought in any time it is desired to do so.

The General Petroleum recently finished its No. 1 Ochsner in section 26-22-18 doing 3,100 bbls. per day and, while this well was shut in within 24 hours after completion, it definitely extended the productive limits 6 miles south of the discovery. Four wells are producing in the north dome in addition to the Milham Exploration's discovery well, No. 1 Elliott in section 2-21-17, but in addition to this group there are 20 others which could be finished within 30 days as they are standing cemented on top of the pay in compliance with the Kettleman agreement.

Geologically the major Kettleman Hills anticline is the largest single structure in California as the entire Kettleman Hills structural line has approximately 200 square miles of drainage area. The north dome extends along the axis in the northern portion of the hills for approximately 12 miles, while the middle dome extends along the strike of the hills for about five miles. The south dome, like the north, has perfect closure and looks rather favorable for ultimate development of substantial production as the Bolsa Chica Oil Co. encountered oil in the Ethegoin Jacalitos formation (Pliocene-Miocene) a few years ago at shallow depths. The north dome has a broad flat crest approximately 10 miles long and has average moderate dips on the flanks between 20° and 30°.

Only the north dome at Kettleman Hills has been proven productive up to the present time but it would seem logical to assume that at least one of the other two will likewise be found productive when tested out on top of the structure.

Geological Mapping Differs

Geological mapping of the Kettleman Hills anticline differs according to the interpretation of various geologists. The northern part of the south dome can be traced quite distinctly but the break between the north and middle domes is not as easily discernible and the estimated probable limits of production are therefore subject to variation, depending upon each individual interpretation. Up to the present time, approximately 5,000 acres has been proven actually productive as a result of wells located approximately 10 miles apart along the axis of the structure but it is probable that this will be extended still further by subsequent drilling. Developments indicate that the north dome of the Kettleman Hills field will be the largest single structure ever opened up in the state and, if all three domes are ultimately found productive, the major Kettleman Hills anticline may perhaps yield more oil and gas than the Newport Beverly sheer zone, along which are located the Long Beach, Dominguez, Rosecrans, Huntington Beach, Potrero, Seal Beach, Inglewood, Newport and Beverly fields of Los Angeles basin.

The Standard Oil Co. owns every other 640 acres in fee at Kettleman Hills and therefore should benefit more than any other concern in future development. The Continental Oil Co. also holds extensive acreage and a check indicates that its leases in the north dome, although much smaller in area, are equal to the holdings of the Standard from a structure standpoint as they are located right on the apex and extend along the axis in both directions.

CALIFORNIA PRODUCTION BY FIELDS

Year—	Elwood-Goleta	Santa Barbara	Rincon	Ventura Avenue	Ventura-Newhall
Prior	.....	.....	.....	.....	175,000
1876	.....	.....	.....	.....	12,000
1877	.....	.....	.....	.....	13,000
1878	.....	.....	.....	.....	15,227
1879	.....	.....	.....	.....	19,858
1880	.....	.....	.....	.....	40,552
1881	.....	.....	.....	.....	99,862
1882	.....	.....	.....	.....	128,636
1883	.....	.....	.....	.....	142,857
1884	.....	.....	.....	.....	262,000
1885	.....	.....	.....	.....	325,000
1886	.....	.....	.....	.....	377,145
1887	.....	.....	.....	.....	673,572
1888	.....	.....	.....	.....	690,333
1889	.....	.....	.....	.....	303,220
1890	.....	.....	.....	.....	307,360
1891	.....	.....	.....	.....	323,600
1892	.....	.....	.....	.....	385,049
1893	.....	.....	.....	.....	470,179
1894	.....	.....	.....	.....	570,469
1895	.....	.....	.....	.....	474,624
1896	.....	.....	.....	.....	298,866
1897	.....	.....	.....	.....	631,135
1898	.....	.....	.....	.....	763,871
1899	.....	.....	.....	.....	743,998
1900	.....	.....	.....	.....	628,734
1901	.....	.....	.....	.....	495,943
1902	.....	.....	.....	.....	646,496
1903	.....	.....	.....	.....	682,185
1904	.....	.....	.....	.....	650,779
1905	.....	.....	.....	.....	476,898
1906	.....	.....	.....	.....	404,379
1907	.....	.....	.....	.....	435,584
1908	.....	.....	.....	.....	498,015
1909	.....	.....	.....	.....	516,628
1910	.....	.....	.....	.....	652,575
1911	.....	.....	.....	.....	661,785
1912	.....	.....	.....	.....	859,385
1913	.....	.....	.....	.....	1,022,052
1914	.....	.....	.....	.....	968,421
1915	.....	.....	.....	.....	1,028,106
1916	.....	.....	.....	2,650	1,083,635
1917	.....	.....	.....	7,100	1,129,817
1918	.....	.....	.....	23,609	1,373,213
1919	.....	.....	.....	38,435	1,734,762
1920	.....	.....	.....	105,185	1,944,630
1921	.....	.....	.....	127,674	1,975,473
1922	.....	.....	.....	685,247	2,330,630

(Continued on next page)

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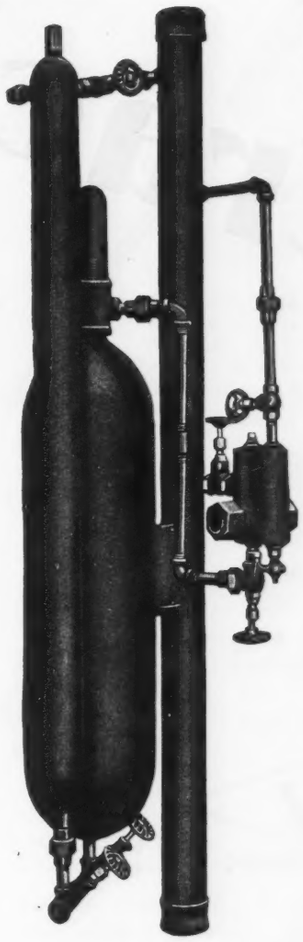

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Byers Drilling Co., Oklahoma City
A & B Drilling Co., Oklahoma City
Capitol Drilling Co., Oklahoma City
Prince & Prince, Electra, Texas
Clark & Cowden, Duncan, Okla.
Independent Oil Co., Oklahoma City
G. E. Gilberth, Oklahoma City
Golden & Cochran, Wink, Texas
Haynes Drilling Co., Wink, Texas
Murphy & Graham, Seminole, Okla.
Steinberg & Yerkee, Seminole, Okla.
Fain-McGaha, Wichita Falls, Texas
Alleson & Clevinger, Seminole, Okla.
Winkler & McQueen, Duncan, Okla.
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Manahan Drilling Co., Seminole, Okla.
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CALIFORNIA PRODUCTION BY FIELDS

Year—	Elwood-Goleta	Santa Barbara	Rincon	Ventura Avenue	Ventura-Newhall
1923	.....	.....	.....	1,423,187	2,279,217
1924	.....	.....	.....	1,831,903	2,188,266
1925	.....	.....	.....	6,999,403	2,264,069
1926	.....	.....	.....	14,795,495	2,204,381
1927	86,840	.....	5,923	17,808,704	2,197,644
1928	895,152	.....	1,082,735	18,920,942	2,096,343
1929	9,435,819	10,868	1,192,237	20,934,388	1,856,706
Grand total	10,417,811	10,868	2,280,895	83,703,922	45,539,664

Year—	Los Angeles and Salt Lake	Whittier	Fullerton	Coyote	Santa Fe Springs
1894	196,094	.....	.....	.....	.....
1895	749,695	.....	.....	.....	.....
1896	902,868	.....	.....	.....	.....
1897	1,064,158	.....	12,000	.....	.....
1898	1,126,000	.....	60,000	.....	.....
1899	1,052,036	.....	217,599	.....	.....
1900	1,280,000	.....	511,550	.....	.....
1901	1,830,000	.....	753,198	.....	.....
1902	2,027,000	.....	1,103,793	.....	.....
1903	793,765	.....	2,305,613	.....	.....
1904	1,241,304	.....	2,224,550	.....	.....
1905	2,226,768	.....	2,118,312	.....	.....
1906	2,675,650	.....	2,434,512	.....	.....
1907	3,372,465	.....	3,294,206	.....	.....
1908	5,138,959	.....	4,273,314	.....	.....
1909	4,350,898	.....	5,157,252	.....	.....
1910	3,729,618	.....	6,281,221	.....	.....
1911	3,223,661	.....	7,081,165	.....	.....
1912	3,073,427	747,439	5,813,037	1,359,303	.....
1913	2,898,846	690,133	6,189,561	3,777,359	.....
1914	2,504,475	636,789	6,495,100	6,998,659	.....
1915	2,094,194	758,163	5,505,999	6,610,508	.....
1916	1,729,761	1,014,667	4,806,104	8,588,699	.....
1917	1,453,161	1,156,752	4,527,875	11,458,471	.....
1918	1,347,471	1,046,467	4,361,751	12,614,598	.....
1919	1,323,021	1,001,048	4,349,376	10,240,359	.....
1920	1,320,573	842,184	5,237,044	8,732,435	.....
1921	1,314,213	735,376	5,962,008	7,419,050	208,216
1922	1,258,287	717,729	4,512,974	7,000,373	11,032,955
1923	1,192,036	645,219	4,064,661	2,447,825	79,781,275
1924	907,453	761,211	4,120,789	5,683,559	26,399,655
1925	731,912	742,676	4,481,443	7,140,004	18,969,528
1926	675,950	746,125	6,987,489	6,030,619	17,446,709
1927	630,600	660,505	7,008,934	5,146,864	15,153,578
1928	560,607	612,126	5,743,044	4,901,998	16,093,931
1929	552,614	563,790	4,813,942	4,176,035	76,477,464
Grand total	62,549,540	14,078,399	132,809,416	120,326,718	261,563,311

Year—	Kettleman Hills	Wheeler Ridge	Santa Maria	Capitan	Summerland
1894	.....	.....	.....	.....	1,800
1895	.....	.....	.....	.....	16,904
1896	.....	.....	.....	.....	39,792
1897	.....	.....	.....	.....	130,136
1898	.....	.....	.....	.....	132,217
1899	.....	.....	.....	.....	208,370
1900	.....	.....	.....	.....	183,486
1901	.....	.....	.....	.....	203,616
1902	.....	.....	94,188	.....	136,252
1903	.....	.....	204,890	.....	131,125
1904	.....	.....	700,450	.....	120,506
1905	.....	.....	3,402,800	.....	96,871
1906	.....	.....	4,799,411	.....	72,810
1907	.....	.....	8,249,236	.....	69,060
1908	.....	.....	8,699,350	.....	67,862
1909	.....	.....	8,017,455	.....	66,338
1910	.....	.....	7,607,830	.....	74,725
1911	.....	.....	7,465,074	.....	71,255
1912	.....	.....	6,801,966	.....	65,715
1913	.....	.....	5,817,711	.....	62,406
1914	.....	.....	4,303,080	.....	55,743
1915	.....	.....	4,466,200	.....	55,800
1916	.....	.....	4,342,605	.....	53,500
1917	.....	.....	5,956,057	.....	54,000
1918	.....	.....	7,180,174	.....	54,000
1919	.....	.....	6,055,448	.....	54,000
1920	.....	.....	5,782,426	.....	54,000
1921	.....	.....	5,465,262	.....	54,000
1922	.....	.....	3,797,903	.....	48,339
1923	.....	128,674	3,003,672	.....	52,862
1924	.....	342,357	2,957,495	.....	53,201
1925	.....	344,760	2,596,581	.....	48,351
1926	.....	371,981	1,852,356	.....	46,865
1927	.....	374,734	1,999,051	.....	49,475
1928	199,699	329,485	2,041,499	.....	44,853
1929	1,951,786	250,156	1,535,815	2,795	93,826
Grand total	2,151,485	2,142,147	125,095,985	2,795	2,824,061

Year—	Sunset	Midway	Elk Hills	Lost Hills-Belridge	Coalinga
1896	.....	.....	.....	.....	14,119
1897	.....	.....	.....	.....	70,140
1898	.....	.....	.....	.....	154,000
1899	.....	.....	.....	.....	439,372
1900	12,500	.....	.....	.....	547,960
1901	188,600	4,235	.....	.....	535,433
1902	167,558	3,048	.....	.....	571,233
1903	352,565	27,305	.....	.....	2,138,058
1904	390,425	910	.....	.....	5,097,853
1905	419,212	18,530	.....	.....	8,882,125
1906	307,550	11,800	.....	.....	8,401,105
1907	704,805	149,944	.....	.....	8,996,268
1908	1,463,510	434,578	.....	.....	10,725,795
1909	1,999,701	2,234,455	.....	.....	15,406,619
1910	9,218,904	11,174,207	.....	4,900	18,646,570
1911	5,559,069	21,584,602	.....	168,410	18,311,251
1912	5,590,824	25,948,980	.....	2,680,961	19,546,122
1913	5,984,651	33,040,129	.....	5,274,553	18,604,626
1914	12,546,616	37,479,228	.....	4,830,921	15,925,887
1915	6,006,607	33,614,396	.....	4,310,476	13,567,380
1916	6,768,658	32,404,213	.....	4,873,501	14,393,437
1917	7,072,333	30,022,102	.....	6,359,421	15,898,912
1918	6,608,940	28,222,640	.....	5,462,857	16,360,225
1919	5,589,885	26,608,708	281,019	4,661,011	16,408,829
1920	5,423,781	25,232,815	7,275,809	4,158,559	15,697,035
1921	4,613,965	24,159,423	18,085,425	3,260,931	12,522,157
1922	5,542,816	24,152,026	11,891,030	2,814,824	9,159,368
1923	5,235,889	22,567,392	8,174,371	1,843,483	5,210,839
1924	6,136,213	21,328,676	13,589,611	1,526,371	10,144,428
1925	6,209,736	20,713,666	11,971,149	1,730,140	7,751,107
1926	6,444,711	27,524,044	12,292,754	1,693,666	7,295,807
1927	6,122,953	25,547,755	10,073,073	1,515,300	7,154,599
1928	5,493,979	21,820,114	8,107,198	1,526,491	4,655,284
1929	6,050,870	19,260,106	6,353,035	1,602,425	3,558,843
Grand total	134,227,825	535,290,027	108,094,474	60,299,201	312,782,786

(Continued on next page)

BE SURE—SPECIFY
Hough Pumping Specialties
To Reduce Your Production Costs

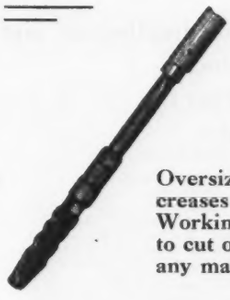
The HUF-DUO Pump

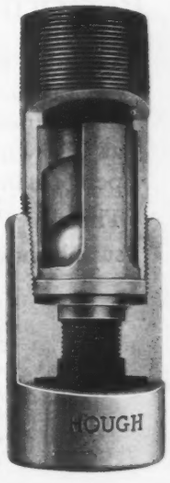
A complete unit—installed and removed complete with Sucker Rods when repair parts are required.

SAND WON'T BOTHER THE HUF DUO.

EXTENSION LOWER VALVE

Oversize Ball and Seat increases intake of fluid into Working Barrel. No Leathers to cut out—Less Cut Oil. Fits any make of Working Barrel.





SPECIALIZED BALLS & SEATS

For every pumping condition.

STEELEX

Made of Alloy Steel—heat treated. For sand conditions.

BRONZEX

For Lode-stone and alkali troubles. Made of a tough, hard Composition Bronze.

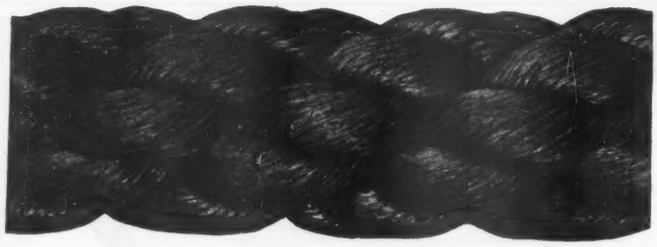
REPELEX

A Non-Corrosive Ball and Seat made of a Rustless Alloy. For acid conditions.

COMBINEX

Steelex Seat — to resist sand. Bronzex Ball — to prevent Lode-stone troubles.

THE CHARLES N. HOUGH MFG. CO.
FRANKLIN, PENNA.



The Character and Personality of **WALL** Rope Has Been Built Upon its Performance in the Oil Fields

WALL Walk-Laid Rope has a steady, even "disposition"—its Uniform Quality has been maintained for a hundred years. And like a man at his work, it is favorably judged primarily by performance.

That is why these prominent distributors and supply houses carry Wall Products:

MID-CONTINENT FIELDS

Mid-Continent Headquarters

215A East Archer St., Tulsa, Oklahoma.

ATLAS SUPPLY CO.
Muskogee, Oklahoma.
Stock Points—Oklahoma: Muskogee, Seminole, Ada, Blackwell, Earlsboro, Maud. Texas: Fort Worth, McCamey, Pyote, Pampa, Vernon, Wink.

THE BOVAIRD SUPPLY CO.
Tulsa, Oklahoma.
Stock Points—Kansas: Independence, McPherson, Wichita Heights. Oklahoma: Seminole, Sapulpa, Maud, Beggs. Texas: Borger.

THE BRIDGEPORT MACHINE CO.
Wichita, Kansas.
Stock Points—Oklahoma: Maud, Seminole, Oklahoma City, Marshall. Texas: Breckenridge, Pampa, Ranger. Kansas: Winfield, Wichita, Russell, McPherson. New Mexico: Hobbs.

WESTERN DRILLING TOOL & SUPPLY CO.
Chanute, Kansas.
Stock Point—Kansas: Chanute.

HINDERLITER TOOL CO.
Tulsa, Oklahoma.
Stock Points — Texas: Big Spring, Eastland, Odessa, Pampa. Kansas: Wichita, Winfield. Oklahoma: Blackwell, Bristow, Tulsa, Okemah.

REPUBLIC SUPPLY CO.
Houston, Texas.
Stock Points—Texas: Houston, Borger, Breckenridge, Big Spring, Electra, Pyote, Pampa, Bryson. Oklahoma: Bristow, Maud, Oklahoma City, Seminole, Tulsa, Wewoka. Yale, Duncan, Wilson. Kansas: Wichita Heights.

WAGNER SUPPLY CO.
Fort Worth, Texas.
Stock Points—Texas: Breckenridge, Forsans, Iraan, Odessa, Wink, Fort Worth.

WESTERN SUPPLY CO.
Tulsa, Oklahoma.
Stock Points — Texas: Borger, Pampa. Oklahoma: Oklahoma City, Seminole, Tulsa.

EASTERN FIELD

NEW MARTINSVILLE SUPPLY CO.
New Martinsville, West Virginia.
Stock Points — West Virginia: New Martinsville. Pennsylvania: Waynesburg.

ROPE AND CORDAGE CO.
Parkersburg, West Virginia.
Stock Points — West Virginia: Parkersburg. Pennsylvania: Bradford. New York: Richburg.

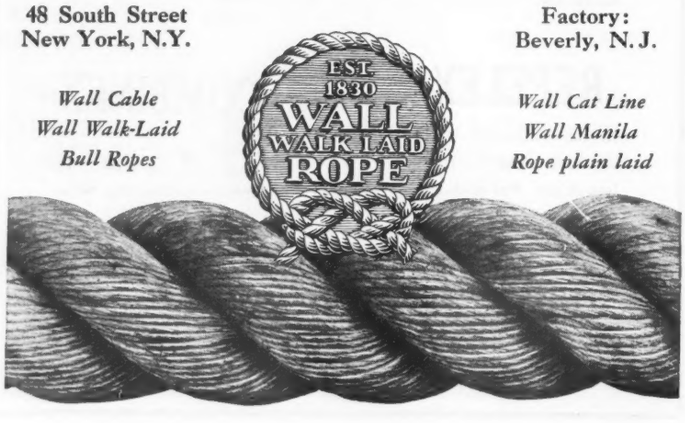
BOVAIRD & CO.
Bradford, Pa.
Stock Point — Pennsylvania: Bradford.

WALL ROPE WORKS, INC.

48 South Street
New York, N.Y.

Factory:
Beverly, N. J.

Wall Cable
Wall Walk-Laid
Bull Ropes



Wall Cat Line
Wall Manila
Rope plain laid

CALIFORNIA PRODUCTION BY FIELDS

Year—	Kern River	Mount Poso	Fruitvale	Round Mountain	McKittrick
1898	.....	.....	.....	.....	10,000
1899	.....	.....	.....	.....	15,000
1900	826,775	.....	.....	.....	80,000
1901	3,278,840	.....	.....	.....	430,450
1902	8,988,046	.....	.....	.....	619,296
1903	16,342,099	.....	.....	.....	1,353,206
1904	17,226,240	.....	.....	.....	1,856,225
1905	15,253,845	.....	.....	.....	1,373,030
1906	12,825,166	.....	.....	.....	680,756
1907	12,346,014	.....	.....	.....	2,415,840
1908	13,803,579	.....	.....	.....	3,076,300
1909	14,508,242	.....	.....	.....	5,807,360
1910	14,776,435	.....	.....	.....	5,471,613
1911	14,078,890	.....	.....	.....	5,477,532
1912	12,446,445	.....	.....	.....	5,094,465
1913	9,980,940	.....	.....	.....	4,496,842
1914	7,030,545	.....	.....	.....	3,820,857
1915	8,094,673	.....	.....	.....	3,585,899
1916	8,539,978	.....	.....	.....	3,347,166
1917	8,593,034	.....	.....	.....	3,275,529
1918	8,060,256	.....	.....	.....	3,060,572
1919	7,630,937	.....	.....	.....	2,837,324
1920	7,457,810	.....	.....	.....	2,600,763
1921	6,700,420	.....	.....	.....	2,070,369
1922	7,317,288	.....	.....	.....	2,417,434
1923	6,816,134	.....	.....	.....	2,191,702
1924	6,773,321	.....	.....	.....	2,094,598
1925	5,901,877	.....	.....	.....	2,091,971
1926	4,312,171	46,225	.....	.....	1,961,028
1927	6,098,582	40,277	.....	8,700	1,855,603
1928	5,071,284	53,977	133,433	44,455	1,805,485
1929	6,089,344	1,826,056	594,498	223,734	1,708,520
Grand total	277,169,205	1,966,535	727,931	276,889	78,982,735

Year—	Montebello	Richfield	Huntington Beach	Long Beach	Torrance
1917	789,635	.....	.....	.....	.....
1918	6,839,267	.....	.....	.....	.....
1919	12,100,784	965,408	.....	.....	.....
1920	11,124,585	2,565,346	38,116	.....	.....
1921	9,065,723	8,206,962	2,518,812	75,588	.....
1922	6,692,024	8,314,528	11,169,383	18,560,595	190,785
1923	4,075,669	6,121,335	34,355,642	68,810,361	3,128,694
1924	6,230,299	4,457,679	17,533,520	60,122,002	17,526,123
1925	6,843,194	4,318,488	15,887,474	40,173,375	13,242,113
1926	6,515,493	5,574,244	19,064,814	37,931,964	10,354,905
1927	5,498,252	7,884,042	26,344,697	34,541,667	8,338,938
1928	4,369,638	6,798,673	19,642,278	62,467,103	6,454,067
1929	3,657,922	5,776,258	16,007,030	60,495,555	5,000,218
Grand total	83,802,485	60,982,963	162,561,766	383,178,210	64,235,843

Year—	Dominguez	Rosecrans	Inglewood	Newport	Seal Beach
1923	157,698	.....	.....	.....	.....
1924	6,811,531	611,432	10,445	.....	.....
1925	13,328,817	7,263,466	18,348,395	32,661	.....
1926	7,801,586	6,114,430	17,390,131	32,973	587,107
1927	5,887,645	3,506,116	12,751,556	12,485	16,424,929
1928	4,267,009	2,392,325	10,762,797	13,146	12,436,371
1929	3,606,850	2,463,808	8,768,101	15,330	14,418,305
Grand total	41,861,136	22,351,577	68,031,425	106,595	43,866,712

Year—	Potrero	Lawndale	Playa Del Rey	Watsonville Miscellaneous	Total California
Prior	.....	.....	.....	.....	175,000
1876	.....	.....	.....	.....	12,000
1877	.....	.....	.....	.....	13,000
1878	.....	.....	.....	.....	15,227
1879	.....	.....	.....	.....	19,858
1880	.....	.....	.....	.....	40,552
1881	.....	.....	.....	.....	99,862
1882	.....	.....	.....	.....	128,636
1883	.....	.....	.....	.....	142,857
1884	.....	.....	.....	.....	262,000
1885	.....	.....	.....	.....	325,000
1886	.....	.....	.....	.....	377,145
1887	.....	.....	.....	.....	678,572
1888	.....	.....	.....	.....	690,333
1889	.....	.....	.....	.....	303,220
1890	.....	.....	.....	.....	307,360
1891	.....	.....	.....	.....	323,600
1892	.....	.....	.....	.....	385,049
1893	.....	.....	.....	.....	470,179
1894	.....	.....	.....	14,715	783,078
1895	.....	.....	.....	4,116	1,245,339
1896	.....	.....	.....	2,135	1,257,780
1897	.....	.....	.....	4,000	1,911,569
1898	.....	.....	.....	3,000	2,249,088
1899	.....	.....	.....	1,500	2,677,875
1900	.....	.....	.....	248,945	4,319,960
1901	.....	.....	.....	.....	7,710,315
1902	.....	.....	.....	.....	14,356,910
1903	.....	.....	.....	3,670	24,334,481
1904	.....	.....	.....	39,352	29,548,634
1905	.....	.....	.....	29,650	34,298,041
1906	.....	.....	.....	10,090	32,623,229
1907	.....	.....	.....	69,090	40,102,512
1908	.....	.....	.....	125,475	48,306,737
1909	.....	.....	.....	126,775	58,191,723
1910	.....	.....	.....	58,970	77,697,568
1911	.....	.....	.....	61,350	83,744,044
1912	.....	.....	.....	45,870	90,074,439
1913	.....	.....	.....	27,375	97,867,184
1914	.....	.....	.....	27,375	103,623,695
1915	.....	.....	.....	27,375	89,725,776
1916	.....	.....	.....	27,450	91,976,019
1917	.....	.....	.....	27,375	97,781,574
1918	.....	.....	.....	27,375	102,643,415
1919	.....	.....	.....	27,375	101,907,729
1920	.....	.....	.....	25,610	105,618,706
1921	.....	.....	.....	25,854	114,566,901
1922	.....	.....	.....	20,338	139,626,876
1923	.....	.....	.....	21,058	263,728,895
1924	.....	.....	.....	20,979	230,063,117
1925	.....	.....	.....	20,986	230,147,342
1926	.....	.....	.....	20,990	224,117,013
1927	571	.....	.....	20,871	230,751,468
1928	107,380	15,686	.....	22,010	231,982,597
1929	271,446	392,533	25,121	22,762	292,036,911
Grand total	379,397	408,219	25,121	1,261,901	3,308,367,975

OKLAHOMA P. L. STATEMENT

The Oklahoma Pipe Line Co.'s statement for February shows pipe line runs of crude oil in that month to have been 3,185,551.02 bbls.; daily average, 113,769.68 bbls.; shipments, 3,325,874.04 bbls.; daily average, 118,781.22 bbls.; stocks March 1, 3,407,157.92 bbls. Compared with January business the above figures indicate an increase in February of 3,129 bbls. per day in pipe line runs and 4,190 bbls. per day in shipments and a decrease in crude oil stocks of 147,061 bbls. during the month.

STOLEN PROFITS

THE PROFITS OF ANY ORGANIZATION MIGHT JUST AS WELL BE STOLEN AS DISSIPATED BY THE USE OF IMPRACTICAL OR OBSOLETE EQUIPMENT.

WINCHES HAVE LONG BEEN BUILT FOR HOISTING JOBS OF ALL KINDS — SOME WITH ONE SPEED, SOME WITH TWO OR THREE, BUT FEW IF ANY OF THEM ARE OR CAN BE ADAPTED TO OILFIELD USES WITH PROFITABLE RESULTS.

THERE ARE FIVE IMPORTANT AND PARAMOUNT FACTORS THAT MUST BE CONSIDERED IN BUILDING AN OIL FIELD WINCH, ALL OF WHICH ARE INCORPORATED IN "CARD-KELT ALL-STEEL" WINCHES.

QUALITY Steels of the strongest and toughest alloys.

SPEEDS The varying load as the rods or tubing comes out of the hole or as the swabbing or bailing conditions change, makes a broad selection of drum speeds beyond question a most important factor. With but two or three speeds, the crew must stop, change lines in the derrick, or wait for the slow-moving block to reach the top.

"CARD-KELT ALLSTEEL" Winches have 4 forward speeds and 1 reverse on Models 10—15—and 20—

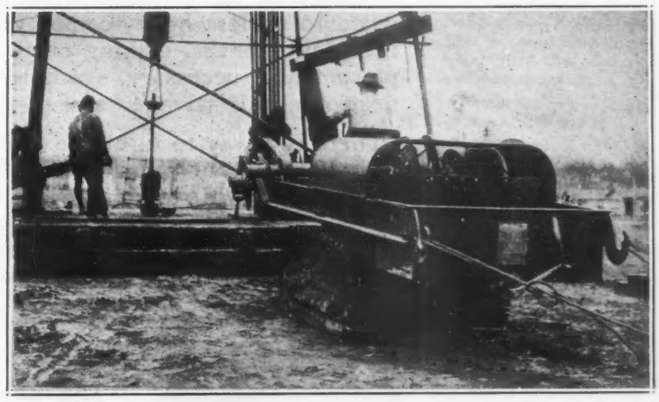
6 forward speeds and 2 reverse on Model 30.

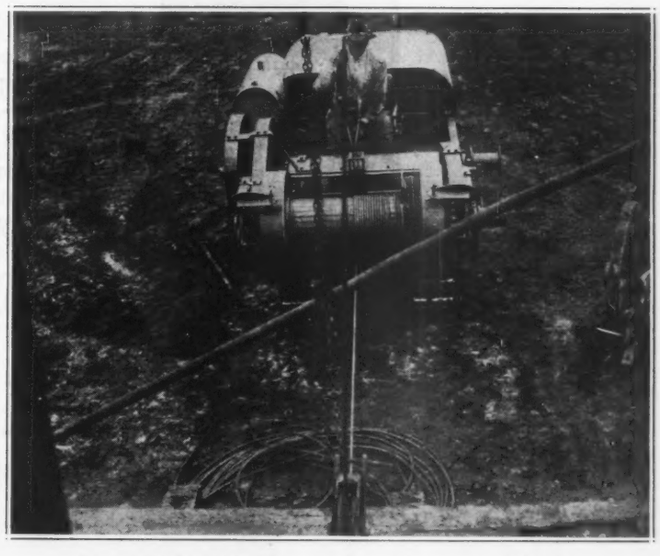
8 forward speeds and 2 reverse on Model ST-60.

SIZES The depth of the well and size of the tubing are the controlling factors to the size that should be purchased. "CARD-KELT ALL-STEEL" Winches are built in 5 sizes to fit wells of 1,000 ft. or under, up to the deepest well in the world, of about 9,000 ft., making standardization for all fields possible. A very important item.

MOBILITY Mud and sand are the bogey. The Winch must, for insured mobility, be mounted on a tractor that will operate through mud of any depth or over sand or unfavorable or no road conditions. This is why "Caterpillar" tractors were selected on which to mount "CARD-KELT ALLSTEEL" Winches.

SERVICE "CARD-KELT ALLSTEEL" Winches are sold through "Caterpillar" dealers who, as a whole, are the best equipped service organization in the world. There is a dealer near or in every oilfield on the globe, who carries parts and maintains a corps of efficient service men.





New Model "30", longer drum, capacity 4290 feet ⅝ Line. Two 6"x30" brakes forced cooled flanges.

The Allsteel Products Mfg. Co.

801-825 South Wichita St., *Wichita, Kansas*

Makers of high-grade oil field auxiliary equipment for "Caterpillar" Tractors

Write for full information.

OIL MEN!

meet the Teredo

"This, gentlemen, is the work of the teredo, sometimes called the shipworm. Salt-water locations are infested with it. It drills untreated wood to useless honey-combs within a few months, making quick replacements necessary, completely destroying all salvage value.

"There is a way to fight the teredo. See that all your piling and timber is protected with toxic creosote oil. When properly injected, this protects it in teredo infested salt-water, and also protects it against termites and fungi in other locations."

The photograph shows the terrific damage the teredo can do in short time. The same thing will happen to your timber if you do not guard against it.

Protection is easily secured by the use of "Black Beauty" products. You will thus guard against every danger—against teredo, termite, and the insidious decay of fungus growth.

Send your blue-prints and specifications to the Petroleum Department of the Texas Creosoting Company.

Your material will be prepared in advance and kept until you need it. Then it will be shipped to you immediately. Don't throw your timber to the teredo. Give it a chance!

"BLACK BEAUTY" Products

TEXAS CREOSOTING COMPANY

ORANGE, TEXAS HOUSTON, TEXAS

Of Interest to Sales Departments

ISSUE RULING COVERING INSTALLATION OF TANKS

The Public Service Commission of Montana has issued the following ruling regarding the installation of tanks for the storing of gasoline and other inflammable liquids, effective March 14:

"Inflammable liquids such as gasoline, kerosene, distillate, etc., shall be stored in separate tanks or containers. The distance between tanks or containers containing such different types of inflammable liquids shall be at least 10 feet. The use of a single tank or container, partitioned into compartments for the storing of different types of light petroleum products, is expressly prohibited.

"Separate pipe lines shall be provided for each tank or container; the use of a common pipe line for unloading both gasoline and kerosene is expressly prohibited. There shall be no pipe connections of any kind between tanks or containers containing gasoline and those containing kerosene. The handling of both gasoline and kerosene through a single pump is hereby declared dangerous and forbidden; provided, however, that the above provisions do not apply to petroleum products in the course of manufacture at refineries.

RULING ON GASOLINE TAX

The Supreme Court of Mississippi has held that where gasoline is sold to purchasers in the State to do with as they liked, the sale was taxable even though there is a regular course of business which takes the gasoline into another state. The Superior Oil Co., plaintiff, sold the gasoline to packers in Biloxi, Miss., and delivered the fuel at the packers' wharves. The packers took the fuel to Louisiana, where they delivered it to fishermen. The oil company received a so-called bill of lading from the packers providing that the gasoline should remain its property until "delivered to consignee or consignee's agent at point of destination."

This document, the court pointed out, seems to have had no other use than to try to convert a domestic transaction into one of interstate commerce. The gasoline was in the hands of the purchaser to do with as he liked, and there was nothing that committed it to sending the oil to Louisiana except its own wishes, the court said.

SHELL DETROIT DISTRIBUTION

CHICAGO, Mar. 8.—The Shell Petroleum Corp. has built and equipped and is operating a string of 35 service stations at Detroit, Mich. Up to the first of December, the Waco Oil Co. was the distributor of Shell products at the City of the Straits but that company, having been purchased by the Paragon Refining Co. of Toledo, the Shell corporation was left without any real distributor in Detroit. The number of stations may be increased later if the results of the present stations seem to demand the increase. The Shell Petroleum Corp. has bulk storage at Detroit which it supplies by tanker from the refinery at East Chicago at a considerable saving in freight costs as the freight rate from East Chicago to Detroit is .0165 cents per gallon and the cost per tanker is estimated at not to exceed .0038 cents per gallon.

TAKE CHARGE OF OFFICE

A. K. Krueger and O. B. Hampton have been placed in charge of the Chicago office of the Acme Petroleum Co. They succeed E. A. Cousino who resigned the first of the month.

GASOLINE CONSUMPTION INCREASES IN UNITED STATES EXCEPT FLORIDA

Florida was the only State to show a decline in gasoline consumption during 1929, according to a report compiled by the American Petroleum Institute. The total increase in the 40 states listed below amounted to 992,473,000 gallons, or 12.3 per cent, which may be taken as representative of the increase for the entire country. California continues to lead all reporting states in the consumption of motor fuel and is credited with

(Continued on Page 244)

GASOLINE CONSUMPTION BY STATES, DECEMBER, 1929

State—	Month of Nov., 1929 gallons	Month of Dec., 1929 gallons	Month of Dec., 1928 gallons	12 months ending with Dec., 1929 gallons	12 months ending with Dec., 1928 gallons
Alabama	14,114,000	13,561,000	14,403,000	184,207,000	168,276,000
Arizona	6,009,000	6,260,000	4,819,000	63,995,000	50,455,000
Arkansas	11,996,000	9,467,000	8,557,000	134,606,000	119,184,000
Colorado	10,646,000	10,390,000	8,829,000	156,781,000	142,015,000
Delaware	1,695,000	3,211,000	2,197,000	32,576,000	27,706,000
District of Columbia	6,036,000	5,785,000	5,499,000	71,827,000	63,579,000
Florida	18,593,000	20,530,000	20,042,000	224,153,000	226,904,000
Georgia	18,588,000	18,433,000	18,056,000	219,266,000	206,138,000
Idaho	4,987,000	3,976,000	3,127,000	55,125,000	50,148,000
Indiana	33,869,000	29,603,000	29,982,000	432,095,000	388,466,000
Iowa	27,532,000	24,381,000	21,659,000	335,629,000	306,651,000
Kansas	24,223,000	26,265,000	21,281,000	361,165,000	315,671,000
Kentucky	12,819,000	11,302,000	11,143,000	154,656,000	134,836,000
Louisiana	14,514,000	14,659,000	17,056,000	175,199,000	169,046,000
Maine	3,032,000	5,137,000	4,690,000	95,858,000	82,203,000
Michigan	63,824,000	53,424,000	53,104,000	785,279,000	673,335,000
Minnesota	29,148,000	21,718,000	22,987,000	358,063,000	328,434,000
Mississippi	*10,585,000	*10,171,000	11,117,000	*138,157,000	129,167,000
Missouri	33,496,000	29,494,000	27,169,000	389,765,000	355,001,000
Nebraska	15,879,000	14,935,000	13,241,000	214,242,000	198,446,000
Nevada	1,464,000	1,404,000	1,017,000	17,813,000	14,378,000
New Hampshire	6,726,000	3,364,000	3,169,000	59,898,000	48,235,000
New Jersey	39,832,000	37,643,000	33,546,000	497,718,000	422,348,000
New Mexico	4,091,000	4,014,000	3,000,000	48,458,000	36,793,000
North Carolina	22,834,000	27,522,000	22,756,000	265,112,000	246,087,000
North Dakota	5,787,000	3,762,000	5,386,000	124,027,000	117,169,000
Ohio	77,399,000	67,197,000	67,029,000	955,328,000	860,631,000
Oklahoma	26,396,000	26,367,000	23,624,000	316,894,000	280,781,000
Rhode Island	5,614,000	5,087,000	5,344,000	79,102,000	65,872,000
South Carolina	10,490,000	10,112,000	10,205,000	118,596,000	109,938,000
South Dakota	8,387,000	7,441,000	7,413,000	123,265,000	110,652,000
Tennessee	16,659,000	16,219,000	14,955,000	195,036,000	171,276,000
Texas	64,364,000	65,438,000	59,359,000	769,608,000	670,817,000
Utah	4,652,000	4,032,000	2,987,000	56,546,000	47,634,000
Vermont	3,684,000	2,419,000	2,470,000	43,992,000	37,312,000
Virginia	17,672,000	16,548,000	15,746,000	208,304,000	183,447,000
Washington	20,711,000	18,705,000	16,907,000	253,168,000	227,043,000
West Virginia	10,672,000	8,980,000	8,519,000	125,370,000	111,345,000
Wisconsin	33,529,000	26,274,000	25,337,000	403,396,000	357,146,000
Wyoming	2,361,000	2,003,000	1,700,000	34,547,000	31,794,000
Total	749,909,000	687,233,000	649,427,000	9,278,822,000	8,286,349,000
Daily average	24,997,000	22,169,000	20,949,000	25,421,000	22,640,000
Increase over previous year:					
Amount of increase	.....	37,806,000	.....	992,473,000	.....
Percentage increase in daily average	.....	5.8%	.....	12.3%	.....
Massachusetts	40,784,000	34,641,000	.....	.....	.....

*Estimated.

State—	Quarter ended Sept. 30, 1929 gallons	Quarter ended Dec. 31, 1929 gallons	Quarter ended Dec. 31, 1928 gallons	12 months ending with Dec. 31, 1929 gallons	12 months ending with Dec. 31, 1928 gallons
California	287,922,000	323,617,000	276,945,000	1,253,324,000	1,101,404,000
Montana	27,564,000	19,302,000	15,313,000	78,293,000	74,272,000
Pennsylvania	253,940,000	246,787,000	200,662,000	903,282,000	759,027,000

SHELL CORPORATION DESIGNS NEW AVIATION TRUCK FOR AIRPORTS

To better serve its aviation customers the Shell Petroleum Corp. of St. Louis has purchased six 2-ton trucks which will be placed in operation immediately at principal airports.

The special aviation service body mounted on a 165-inch chassis, was designed by F. A. Jones, superintendent of automotive equipment for the Shell Petroleum Corp. The truck has a three-compartment tank with a capacity of 450 gallons of gasoline. Each compartment is equipped with a motor-driven pump for conveying the three grades of gasoline carried, through meters to the tanks in the airplanes.

Four 40-gallon tanks concealed by aluminum covers, are mounted on each side of the gasoline compartments. Three of these side tanks are for the four grades of lubricating oil, the greases and non-freeze mixture carried. The oil tanks are jacketed and are electrically equipped so that their contents can be heated from any 110-volt outlet.

The fourth tank on each side is used for water and is connected with the air pressure tank so that water can be forced to any part of the airplane. Located just under these tanks are a number of compartments for tools and portable equipment. A number of newly developed devices with which this truck is equipped make for the utmost safety in servicing planes. An Alemite air pressure system mounted in the front is also a part of the equipment of this truck.

There is an air tank at the rear of the truck for the inflation of landing tires as well as for furnishing pressure to the oil tanks when delivering their contents. This air tank is filled by a compressor driven by a power take-off from the transmission.

A 5,000-candle power chromium-plated beacon type of floodlight is mounted at the rear of the gasoline tanks and is used for servicing planes at night and can also be used as a beacon light or as a floodlight.

Two fire extinguishers are mounted on the platform at the back of the truck. Other special equipment includes a large tow hook and a foot plate on which the tail skid of light planes can be placed for towing. The truck body and wheels are finished in the characteristic Shell colors of yellow and red and carries on each side the new "Shell and Wings" aviation insignia of the company.

New type aviation service truck of Shell Petroleum Corp.

NAVY SEEKS GASOLINE BIDS

WASHINGTON, D. C., Mar. 10.—The Navy Department is inviting bids for motor gasoline and domestic aviation gasoline for delivery on the East Coast, these bids to be opened March 14, 1930. Over 1,000,000 gallons will be for delivery at Hampton Roads. Other quantities on the East Coast, which include the Gulf, range from 300,000 gallons down to a few hundred gallons of motor gasoline.

Aviation oil is being called for in smaller quantities ranging from 9,400,000 gallons at Pensacola, Fla., and 470,000 gallons at Hampton Roads down to a few thousand gallons.

REDUCE INSPECTION FEE

A reduction from 3 to 1½ cents per barrel has been made in the inspection fee for gasoline in the State of Nebraska as the result of the findings of the State Supreme Court that the latter amount was sufficient to pay the expenses of the department. The court based its opinion on the fact that the inspection fee is intended to cover the cost of the inspection and not yield a revenue. Previous decisions by the court reduced the original inspection fee from 10 cents per barrel to 3 cents. The case was successfully presented by the Century Oil Co. against the Department of Agriculture of the State.

OIL TRADES OFFICERS

NEW YORK, Mar. 8.—Clifford T. Weihmann, of the Smith-Weihmann Co., has been elected president of the Oil Trades Association of New York for 1930. Other officers elected include A. A. Hoffman, of the American Oil & Supply Co., vice president; Joseph C. Smith, of the Smith-Weihmann Co., secretary; and Philip C. Meon, of the Borne-Scrymser Co., treasurer.

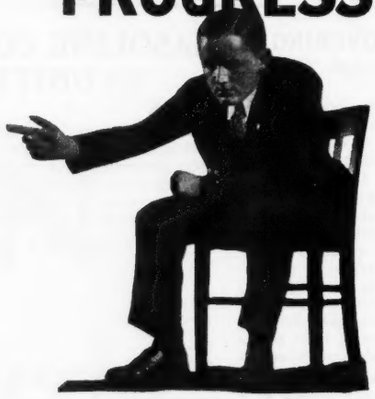
Directors elected were as follows: Albert J. Squier of the Warren Lubricant Co., R. E. E. Hood, William L. Koburger of the William L. Koburger Co., George Suraud of the Chelsea Oil & Supply Co., William Stewart Williams of the Asiatic Petroleum Corp., Edwin Stern of Louis Stern Sons., Inc., and C. Rogers Brown of the Brown-Edwards Co.

"Here, Lad—

What's the idea of buying those new Lincoln gas engine driven welders—and why the Lincoln?

When you seem bent on spending — how are we going to save any money?"

PROGRESS



TRADITION

"Easy, Pop—

By spending it this way.

Even we cannot get gasoline for nothing.

These new improved Lincoln Gas Engine Driven Welders save 25% in fuel consumption.

They are equipped with an automatic idling device which, while saving gasoline, imposes less wear and tear on the engine.

And, of course, by having the new improved 'Stable-Arc' welders, we obtain to the fullest extent all the advantages offered by my friend 'Arc Welding'—especially saving more money on operating costs.

So you see Pop, I'm not *bent* on spending money — I'm *straight* on it this time."

The Lincoln "Stable-Arc" Welder

—welds easier
—makes better welds
—permits greater output

because of the steady uniform arc throughout entire welding range, which is the result of:

Variable voltage design

Laminated magnetic circuit

Separately-excited generator field

Double control of welding heat

All steel construction

No other welder has all these features.

The Lincoln Electric Co.
Dept. No. 26-3 Cleveland, O.

"Stable Arc"

W-127

LINCOLN WELDER

NEW RULES REGULATING LEASES ON STATE LANDS IN NEW MEXICO

By Tolbert R. Ingram

DENVER, Colo. Mar. 10.—Austin D. Crile, Commissioner of Public Lands of the State of New Mexico, has issued a complete list of new rules regulating oil leases on state land. The new rules, it was announced, are made with consideration of the decision of the state supreme court in the Malone case.

The Malone case, as it is generally known, has been in the New Mexico courts for some time and has been argued before the supreme court on several occasions, the decision handed down at the January, 1930, term being on a rehearing. It opened the way for a judicial decision on certain rulings of the land office which had a widespread effect on leases on state land in New Mexico.

R. L. Malone, of Roswell, had a lease on state land dated May 3, 1924, which ran for five years and which called for annual rentals of 16 cents per acre. According to the terms of the lease, it expired on May 3, 1929. This was what is known as a Form 36-B lease. Section 10 of this lease reads as follows:

"If at the expiration of five years from the date hereof, oil or gas in paying quantities is not being produced from any of the lands upon which this lease is then in force, it is agreed that this lease shall expire, but such lessee may apply for and have preference over other parties in leasing the land according to the rules of the State Land Office."

Effect of New Law

Prior to the date of expiration of the Malone lease, March 23, 1929, a new law affecting state leases enacted by the legislature went into effect. Section 7, Chapter 125 of the Laws of 1929, created restricted areas at which leases could be sold only at public auction. It had been the practice of the land office to give notice of the expiration of leases followed by a 30-day period in which the ex-lessee could come in and close for a new lease. Malone filed his application for a new lease upon the land covered by his old lease 26 days after the expiration of the five-year term of the original lease. Dr. Crile, who had succeeded the late J. D. Pankey as commissioner of the land office, refused to issue a new lease to Malone on the ground that the land was in a restricted area and the law of 1929 would not permit him to grant it without an auction. Malone, through his counsel, contended that the commissioner could not deprive him by law of a new lease as provided in Section 10 of the old lease, and could not make him bid for the lease without posting a rule. No rule covering such a case had been posted. The generally accepted effect of such a ruling would be to invalidate many leases issued since the 1929 law went into effect.

Malone went into the district court in a mandamus action to compel the Commissioner of the Land Office to issue a new lease to him on the land covered by the expiring lease. District Judge Reed Holloman, at Santa Fe, decided in favor of the land commissioner and dismissed the mandamus action. An appeal was taken to the supreme court where a decision was rendered. It was re-argued twice and a final decision was handed down in January. In this hearing Malone argued that the 1929 law would not be applicable until 15 days after such a rule had been posted by the land office and that the commissioner could not refuse to give him a lease. The commissioner's position was that the new law served as such a rule and that it had been in effect since 15 days after the law was passed.

Supreme Court Opinion

The opinion of the supreme court was written by Justice John F. Simms and concurred in by Chief Justice H. S. Bickley and Justices Watson, Parker and Catron, and says in part:

"We think there can be no doubt but that the words 'according to the rules of the State Land Office,' as used in the relator's lease, refer to such rules and regulations as may be in effect on May 3, 1929, when the original term of his lease expired. In his argument relator admits such to be the meaning of these words.

"Relator's application to make a new lease upon the land covered by his original lease was not filed until 26 days after the expiration of the five-year term of the original lease. In our original opinion we held that Section 3 of Chapter 125 of the Laws of 1929, which provides that application must be made prior to the expiration of the original term, applied to relator's lease. On rehearing we have become convinced of the correctness of relator's contention that the preference right provision of Section 3, supra, is merely a provision to be incorporated in or to govern leases made under the Act of 1929. Hence relator's application, not being made under that section, was not required by it to be made prior to the expiration of his lease. No other 'rule of the State Land Office' is

(Continued on Page 244)

SYNDICATE TO DRILL FOR OIL IN CHINA

Attempts to develop the oil fields of China are being renewed in the famous Boon-Chi salt mine district of Szechuen province by a syndicate of Chinese.

In a petition to the ministry of agriculture and mining for support, the syndicate claims to have discovered a field that will rival any in the world for size. The government has dispatched a group of oil geologists into Szechuen to look prospects over.

That oil exists in Szechuen province has been known for 40 years. Early in 1900 a group of Chinese, backed by foreign capital, started to drill in the Boon-Chi district, but the Boxer uprising ended the enterprise.

Nothing was done to renew development until last fall when a group of Swiss geologists visited the region and reported good possibilities in oil for anyone who desired to get rich quick.

Recently several Chinese manifested their desire to become oil operators by forming a combine. Government help, however, is needed in obtaining land leases, for the peasants who own the district are reluctant to turn their property over to any undertaking that will disturb the bones of their ancestors.

OIL FROM TAR SANDS

CHATHAM, Ontario, Mar. 10.—Shareholders of the Bituminous Extraction Co. of Calgary recently approved an increase in the company's capitalization to facilitate extension of operations. The company has been experimenting with the Absher process of extracting oil from the tar sand deposits of northern Alberta. A heat chamber is lowered to the bottom of a shallow well in the sand, and a mixture of air and gas fed as fuel from the surface. Treating a large area around the chamber with intense heat converts the oil into vapor which rises through a small casing and is treated by fractionation towers.

The intense heat generated in the chamber presented a difficulty which was overcome by filling the space between two casings in the combustion chamber with brick and using an asbestos air line. Final tests late in 1929 recovered several gallons of high grade oil. Operations are now being resumed.

NEW MEXICAN OIL RULING

Oil concessionaires, either companies or individuals, operating on land parceled out under agrarian laws must enter into an equitable contract for exploitation with the landowner, under ruling of the petroleum department of the Mexican Ministry of Industry, Commerce and Labor. Concessionaires are given 90 days from date of starting exploitation to make these contracts, which must be submitted to the department for approval.

CALIFORNIA FIELD HAS GREAT OIL RESERVE

(Continued from Page 134)

the future production must come from that vast untested area known as the San Joaquin Valley. During the last year exploration work has shown a consistent increase in the San Joaquin Valley and the starting of many additional wildcats may be expected in this area during the next several years. Discoveries at Kettleman Hills, Buttonwillow, Fruitvale, Mount Poso and Round Mountain and successful extension work at Midway-Sunset and Kern River during the last few years are evidence of the potentiality of this section.

Similar to Los Angeles Basin

Geologically the southern San Joaquin Basin is similar to the Los Angeles Basin, although it is many times larger. Both basins have, at their centers, approximately 5,000 feet of organic rocks that generate oil. Above these rocks there is another 5,000-foot thickness of rocks containing soft sands in which the oil collects. Only the edges of the southern San Joaquin Basin have been developed up to the present time, although the Western Gulf Oil Co. stepped out into the floor of the basin a year or so ago and successfully developed commercial production at Fruitvale. The significance which attaches to this discovery lies in the fact that subsequent exploration at other points out in the floor of the valley may likewise be productive, although most of this work will prove costly because of the depth to which holes will have to be carried for conclusive tests.

Development work around the edge of the San Joaquin Basin has resulted in the discovery of fields such as Kern River, Coalinga, Kettleman Hills, Midway-Sunset, Mount Poso, Round Mountain, Lost Hills, Belridge, Wheeler Ridge and McKittrick. San Joaquin Basin fields produced 1,514,111,240 bbls. of crude oil up to January 1, 1930, notwithstanding that this area has been severely curtailed and more or less relegated to the background during the last 10 years because of flush production in the Los Angeles Basin fields.

The central part of the southern San Joaquin Basin is about three times as large as the entire Los Angeles Basin and is practically untested as far as carefully located tests are concerned. The San Joaquin Basin is primarily a great block of the earth's crust which has been tilted westward. This tilting brings up granite on the east but to the west sedimentary rocks appear, increasing in thickness until far out in the center of the basin they are thicker than any drill can penetrate at present. It is likely that fields discovered in the future will be located in particular areas and almost certainly along narrow lines of horizontal sheering. Only wildcats located along such lines will have a reasonable chance of success.

Faulting Most Important Feature

The most important structural feature of the eastern side of the San Joaquin Basin is faulting, as this partly controls the accumulation of oil. Major lines of faulting are usually parallel to the main mountain range and are many times accompanied by related minor faults at a right angle to the major displacement. Cross faulting is well illustrated in the Round Mountain Field and in the Temblor sediments adjacent to granite deposits. The presence of granitic outcrops discouraged wildcat exploration in the eastern end of the San Joaquin Basin for many years, but this deterrent was removed with the discovery of oil at Mount Poso and Round Mountain by the Shell and Elbe Oil companies in 1926 and 1927. The Mount Poso Field is within 4 miles of granite, while similar deposits can be found less than 3 miles from production at Round Mountain.

The Ventura Basin is another area which probably will play an important part in California's future production, although this section is by no means comparable to the San Joaquin Basin either in size or potentiality. The central Ventura Basin has 20,000 feet or more of Fernando (upper Miocene, Pliocene and lower Pleistocene) reservoir rocks and this is underlaid by an additional 8,000 feet of Modelo and Vaqueros (Miocene) and Sespe (Oligocene?) generative and reservoir rocks.

The topographic features of Ventura County consist of a high rugged mountainous area in the northern section of the country, a series of valleys draining the south central portion and another mountainous area located along the coast in the southeast quarter. There are three river valleys in the south central portion and these contain several proven oil fields, one of which, Ventura Avenue, a few miles north of the city of Ventura, is one of the most prolific discovered in California.

Oil-Bearing Formation Is Thick

This field has enormous drainage area and great thickness of oil-bearing formation. The three valleys referred to are generally known as the Ojai Valley, Santa Clara Valley and Simi Valley, the latter two joining to the west of the South Mountain Field. The geological formations in the Ojai Valley consist principally of a broad mass of Monterey shale which is exposed along Sulphur Mountain and in the hills in the northern part of the valley. There is a narrow strip of Sespe in the intervening area in which has collected migratory oil formed in the diatomaceous shales of the Monterey.

The Ventura Avenue Field, along the Ventura River a little less than 3 miles northeast of the town of Ventura, is situated in about the center of the 14-mile Ventura anticline which has a general northwest-southeast trend. The anticline plunges in both directions from the center of the field and is characterized by steep dips which range from 30 to 60 degrees on the flanks of the structure.

The Ventura Avenue Field had yielded a total of 85,309,854 bbls. of crude oil up to the close of January, 1930, but this does not reflect its total productivity as operators have restricted both drilling and production activities for years. Current production is running around 50,000 bbls. per day but this could be easily stepped up to better than 100,000 bbls. daily if desired. Production comes from the Pico formation of lower Pliocene age and according to conservative estimates the field should ultimately yield approximately 300,000,000 bbls. of crude oil and about 750,000,000,000 feet of natural gas. Ventura Avenue has the reputation of being one of the most difficult areas in California to drill owing to the enormous gas pressures encountered and treacherous subsurface conditions. Topography of the field is severe, embracing elevations from 100 to 1,100 feet.

Proven Field Undeveloped

In addition to the enormous potentiality of the San Joaquin Basin from an exploration standpoint, this area has several proven fields which have not yet been fully developed and others where production has been suspended as a conservation measure for several years. The potentiality of Kettleman Hills is well known. Production in the North Dome, one of three component parts of the major Kettleman anticline, is expected to extend over a large area. Two wells, one in the east end of the field and the other in the west end, approximately 9 miles apart, have been suspended in the oil sand, thus proving that the North Dome is at least this long. Actual width of the field has not been determined but developments indicate that it will be a little over 1 mile wide. Oil from this field tests approximately 60 degrees and, as the gravity indicates, contains the lighter refining fractions with practically no residuum. Potentiality of the South and Middle Domes of the Kettleman anticline has not yet been determined.

The Belridge Field of Kern County will bear watching during the next few week as recent developments indicate the possibility that another Kettleman Hills may be in the making. At the present writing this field cannot be listed as forming part of California's future reserve because the test well of the Bel-

THE IMPROVED

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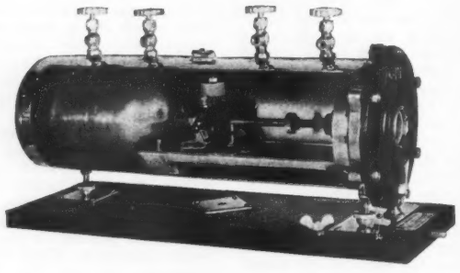

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ridge Oil Co. has not yet been given a chance to make a bid for production. Confidential reports indicate, however, that substantial production is expected and it is logical to assume that a saturated oil sand should result in commercial production.

The well, which has focused the attention of operators on the Belridge Field is the Belridge company's No. 15, in Section 26-27-20, which has been bottomed at 5,088 feet. The finding of a deep oil sand in this well did not come as a surprise to geologists familiar with conditions in the San Joaquin Basin. The Union Oil Co. has been studying this section for a long time and recently acquired an additional 160 acres in close proximity to the Belridge Oil Co.'s deep test.

Further Evidence of Possibilities

As further evidence of its geological possibilities, acquisition of the Universal Consolidated Oil Co. by the Richfield Oil Co. several months ago might be cited. The accompanying map, prepared especially for The Oil and Gas Journal by Martin Vancouvering, shows the position of the Belridge Oil Co.'s deep test in the North Belridge Field and the relation of this field to Kettleman Hills and other producing areas in the vicinity.

The Mount Poso and Round Mountain Fields of Kern County are expected to contribute largely to California's ultimate production and, although both yield a comparatively low grade of crude, the oil is susceptible to refining operations. Both fields are along the east side of the San Joaquin Basin, the former being approximately 15 miles north of the town of Bakersfield and the latter about 12 miles northeast of the same point and approximately 10 miles east and south of Mount Poso.

The structure controlling the accumulation of oil at Mount Poso is a southwesterly dipping monocline in which the Vedder zone is truncated and sealed on the northeast by a normal fault trending about 20 degrees west. Topography of the area has little relationship to the underground structure. Production and development in both of these fields have been curtailed since completion of the discovery wells and this restriction will no doubt be continued indefinitely in the interest of conservation. Mount Poso yielded 2,356,173 bbls. of crude oil up to February 1, 1930, and Round Mountain produced 364,082 bbls. As has been mentioned, however, these figures reflect curtailment work and consequently do not represent true potentials.

Several Dormant Fields

There are several dormant fields in the Los Angeles Basin which will become important factors. This group, incidentally, forms a component part of the big reserve which operators are holding back for that much-delayed rainy day when crude will not be as plentiful as it is at present. The fields in question are Dominguez, Coyote, Inglewood and Seal Beach, all of which have one or more deep zones, not developed. In addition to these, it is probable that several other fields also have deep zones which will be found productive at some future date. This group includes Montebello, Richfield and Fullerton, Brea Olinda. No conclusive deep tests have been drilled in these districts.

The Dominguez Field of the Los Angeles Basin, about 14 miles south of the center of Los Angeles, is one of the outstanding topographic features marking the general line of folding extending from Beverley Hills on the northwest to the San Joaquin Hills on the southeast. The Dominguez structure is an elongated dome, the major axis of which extends in a northwesterly-southeasterly direction. It is controlled almost entirely by the Union and Shell, although the Associated has a small lease along the southeastern edge of the field and the General Petroleum a limited lease along the northern edge. The field as a whole is being developed according to well-established principles of oil field practice along lines insuring the greatest economy of operation with special care given to gaining maximum ultimate recovery of oil with the least waste of natural gas.

Wells Uniformly Spaced

Under co-operative development producing wells have been uniformly spaced 600 feet apart and only 400 feet of the upper oil zone below the shut-off depth has been developed. Exploration work has revealed the existence of three highly productive zones in this field and, although the upper zone has undergone partial development, the two lower zones remain practically untouched. Dominguez has produced 42,193,744 bbls. of crude oil up to the close of January, 1930, and, while it is rather hazardous to venture a guess as to the ultimate recovery because of limited drilling undertaken to date, it is believed this field probably will produce better than 300,000,000 bbls., especially in view of the fact that the Union and Shell will continue to repressure the oil zones and pursue other approved methods of increasing production.

The Inglewood Field of the Los Angeles Basin, along the same general line of folding as Dominguez, Long Beach, Seal Beach, Rosecrans and other prolific fields of comparatively recent origin, is a field of the first magnitude and will prove an important factor in future production. Only one zone has been developed in this field up to the present time although exploration work has proven up the existence of a more prolific zone below that now being produced. It is logical to assume that additional productive horizons will be discovered in this field by subsequent drilling. The Inglewood Field has been held back for years in the interest of conservation and it is likely that this policy will be continued indefinitely, as most of the possible productive acreage is held in large blocks by large companies which appreciate the advisability of continuing this reserve.

Inglewood Field Comparatively Shallow

The Inglewood Field is in the Baldwin Hills, a little over 2 miles northwest of the town of Inglewood and approximately 15 miles east of the recently discovered Playa Del Rey Field. It differs from the other major fields on the Newport Beverly Sheer zone in that it is comparatively shallow, the oil measures occurring at 1,200 to 3,150 feet. Its freedom from town lot development has made it possible for operators holding acreage to retard development, although the first zone was developed rapidly. The proven area consists of approximately 900 acres with the outer limits of production definitely established.

Geologists had looked favorably upon the Baldwin Hills as a probable oil field for years previous to its discovery and wildcats were drilled previous to completion of the discovery well. The present field was discovered by the Standard Oil Co. when its No. 1 well on Los Angeles Investment Lease No. 1 in Section 17-2-15, was brought in doing 145 bbls. of 19.1 gravity oil daily from 2,134 feet.

The Baldwin Hills form the most prominent topographic feature of the general uplift extending from Beverly Hills to Newport. Long Beach and Dominguez are other important topographic highs along the same sheer zone. Structurally the Inglewood Field is an elongated dome approximately 2 miles long by 3,500 feet wide with its axis striking northwest-southeast, cut by a fault along its east edge with a smaller fold east of the fault. This fault has a throw of about 375 feet with the hade to the west. The major portion of the field lying west of the fault is on the downthrow side. The crest of the structure is approximately 1,150 feet below the ground surface where the first oil showings are encountered. The oil-bearing formations consist of alternating brown shales, sandy brown shales and oil sands.

Best Production Practice Followed

The Inglewood Field, although developed rapidly, has been carefully drilled and reflects the most recent and best engineering methods of oil field development. While the areal limits have been established the number and depth of productive measures have not. It is reasonable to expect, however, that oil sands

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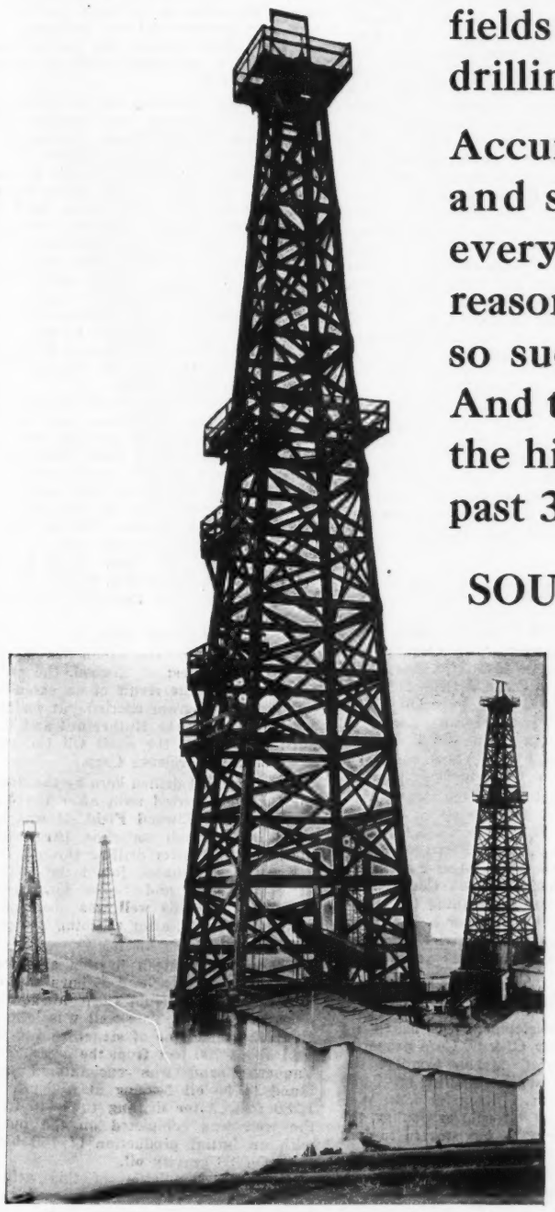

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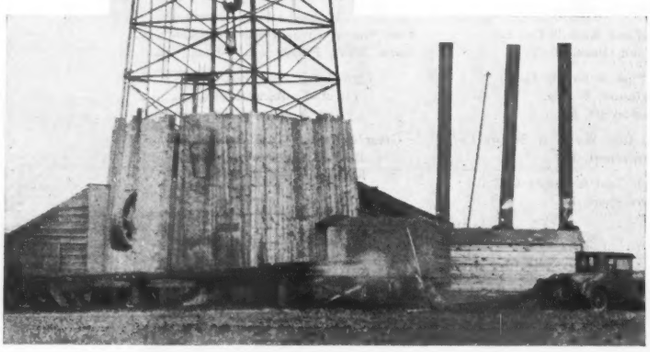

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will be found below the zones thus far developed. Up to the close of January, 1930, the Inglewood Field yielded 68,712,616 bbls. of crude oil with current production averaging approximately 22,000 bbls. per day. This represents a settled figure and future decline in production will be relatively slow as far as the present zone is concerned.

The importance of the Inglewood Field on future production and its possible ultimate production are evident from the yield from sands developed up to the present time. This is especially significant as precedent has established the fact that where an upper zone has been found prolific the underlying horizons will likewise prove highly productive. It is regarded as probable that the ultimate production of the Inglewood Field will be in excess of 250,000,000 bbls. of crude oil.

The Coyote Field of the Los Angeles Basin, which consists of two separate structures designated as East Coyote and West Coyote, is another area which will prove an important factor. This district produced 120,681,551 bbls. of crude oil up to February 1, 1930, but this does not represent anywhere near the total ultimate recovery. Two deep zones are lying dormant in the West Coyote Field and there is a possibility of similar additional horizons being encountered at East Coyote. In the former area, the Standard Oil Co. has proven the existence of a rich oil-bearing horizon at approximately 4,000 feet. This horizon, proven up several years ago by two wells located approximately 2,000 feet apart, is known as the 99 zone. Within the last 60 days the Standard has proven up the existence of another productive horizon below the 99 zone and it is possible that still deeper drilling may result in additional discoveries.

There are other productive areas throughout the State which have not been mentioned here as having additional possibilities of deeper zones or adjacent productive territory. The ultimate production of 10,000,000,000 bbls. assigned to California in this summary undoubtedly will be found to be conservative in years to come.

EASTERN FIELDS

(Continued from Page 80)

In Henry district, Clay County, the Virginian Gasoline & Oil Co. has a rig up on the Brown, Swan & Goshorn tract. In the same district the Pure Oil Co. is drilling on the A. J. Horan and B. F. Pierson farms. In Harts Creek district, Lincoln County, Frank Yates has a rig up on the Frank Yates farm.

In Harden district, Mingo County, the Kermit Gas Co. has started to drill on the George R. C. Wilson farm. In the same district William F. Floyd has started to drill on the C. C. Messer farm. In Jefferson district, Nicholas County, the Hope Construction & Refining Co. has a rig up on the Lewis Lumber & Coal Co.'s tract. In Kanawha district, Fayette County, Grosscop & Schultz are drilling two tests and has locations made for three more on the Black Betsey Coal Co.'s tract. In Falls district, same county, the Gas Development Co. has a rig up on the Cauley C. & C. Co.'s property. In Lewis district, Mason County, the Federal Fuel Corp. is drilling at 2,960 feet on the W. W. Hutson farm. In Williamsburg district, Greenbrier County, the Thompson-Harris Co. has started to drill on the Samuel Kinkle farm.

SOUTHWEST PENNSYLVANIA

In Whitley Township, Greene County, the Peoples Natural Gas Co. completed No. 3,534 on the E. M. Rose farm. It is a gasser in the Big Injun sand. In Richhill Township the Natural Gas Co. of West Virginia is drilling on the Jesse Clutter farm. In East Finley Township, Washington County, the same company has a light pumper at a second test on the William and E. McKeen farm. In the same district H. V. Sproules is drilling another test on the John Louge farm. In South Franklin Township, E. H. Tague is drilling on the George W. Bedillion farm.

TIDELAND OPERATIONS ON CALIFORNIA COAST

(Continued from Page 122)

been one of the curiosities of the California oil industry and little thought was ever given to the legal rights or privileges under which the off-shore wells were drilled. They just seem to have been there longer than the average man can remember and little thought was ever given to the field with its total yearly production of 50,000 bbls. The State Tideland Law of 1921 protected the right of continued operation in these wells. However, the original operators were given no privileges for extended development without filing new permit applications.

The wells in this field apparently obtain their small shallow production from the beveled edges of the Fernando formation which dips off-shore from the ocean beach. The wells on the beach are therefore very shallow and the locations increase in depth toward the end of the piers with a maximum depth of some 600 or 700 feet.

The geology affecting the older formations in this area is very complex and it remained for the Lincoln Drilling Co., early in 1929, to begin the search for a deeper zone. The first well was drilled above the tide line on the ocean beach and, at a depth of 1,045 feet, a body of oil sand, presumably Vaqueros, was encountered. This well was carried to 1,417 feet and, on July 31, 1929, was completed on the pump with an initial production of 300 bbls. per day of 19 gravity oil. This led to the drilling of additional wells along the beach by the Lincoln Drilling Co. and the George F. Getty Corp. entered the area on fee, as well at tideland permit lands.

The productive area here has proven very small. The wells have been small producers of heavy oil and the area is of doubtful commercial value. Eight permits have been granted in this area and three tideland wells have been completed as small pumpers with one now drilling by the Getty organization. The total production from the tideland area is between 200 and 300 bbls. of 19 to 20 degree gravity oil per day, a yield which hardly justifies the expensive off-shore operations.

Capitan Area

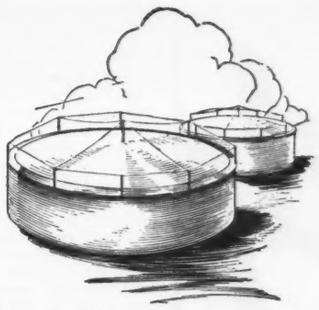
In the Capitan area which lies on the coast 9 miles west of Elwood, the present activity is the result of an extended exploration program carried out on the upland areas of the Rutherford and Erburu ranches by the Shell Oil Co. and the General Petroleum Corp.

The first well drilled here by the Shell Oil Co. was started soon after the discovery of the Elwood Field. It was located on a small anticline paralleling the beach and, after drilling through the lower Miocene shales, found the underlying Vaqueros and Sespe formations barren of oil. This well was abandoned in October, 1929, after reaching a depth of 6,184 feet.

The next operation in this area was the drilling of the No. 1 Erburu well of the General Petroleum Corp. about 1½ miles to the east. This well was located along the same line of structure and inland about 700 feet from the ocean. The Vaqueros sand was encountered and found to be oil bearing at a depth of 1,280 feet. After drilling to 1,446 feet, the well was completed on the pump with an initial production of 150 bbls. a day of 20 gravity oil.

Since the completion of this well a second upland well has been completed by the General Petroleum Corp., with one additional well offsetting to the west by the Shell Oil Co.

A total of 23 tideland permits have been taken along the coast in this vicinity. Two tideland wells are drilling and seven additional wells are in various stages of rigging up. It seems probable that a small productive area will be established here with shallow 1,200 to 1,500-foot wells showing initial productions perhaps less than 100 bbls. per day of low gravity oil. This field may develop on a profitable basis in time, but



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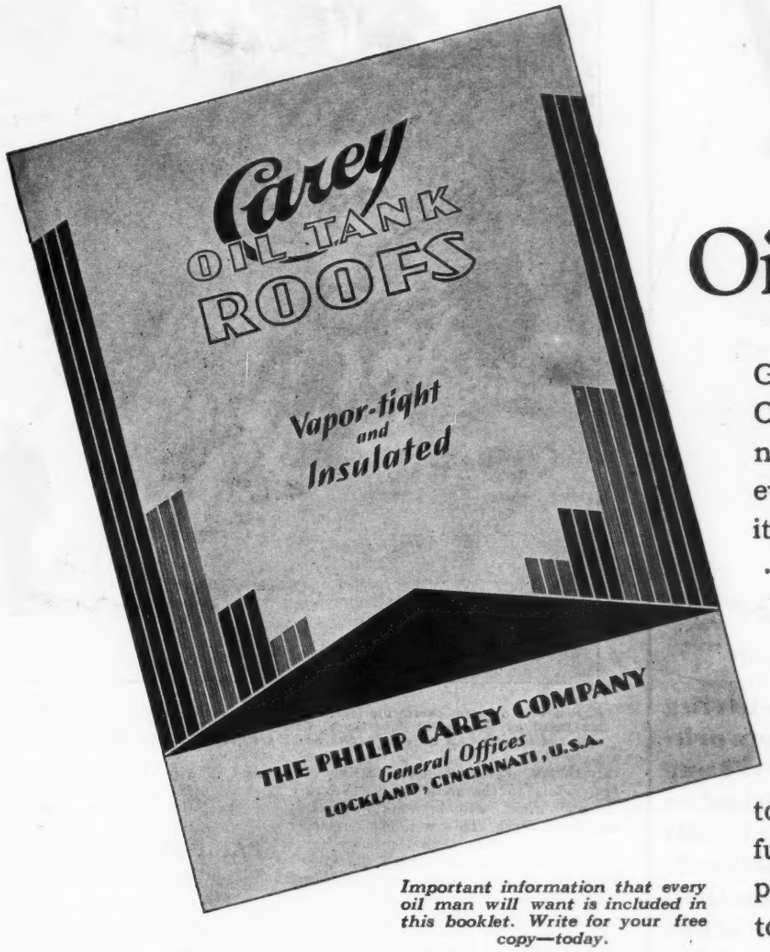

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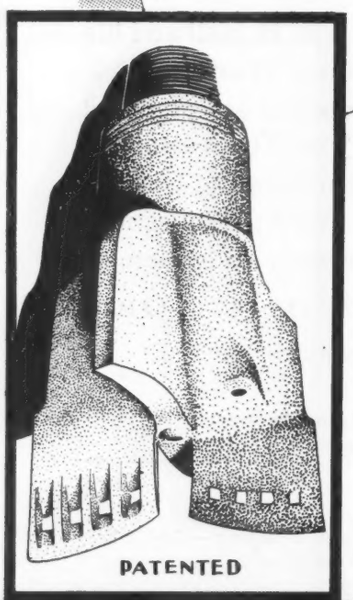

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there is now little incentive to provide an outlet for heavy oil of this type.

Seacliff (Rincon) Field

On the theory that the developed area of the Seacliff or Rincon Field occupies only the extreme easterly nose of a plunging anticline, an interesting offshore test is now being made by the General Petroleum Corp. This test is located at the end of a 1,700-foot pier and is about 2,600 feet west of the nearest producing well along the projected axis of the Ventura anticline. This well recently encountered oil sand in the Fernando formation at a depth of 2,540 feet and, after drilling to 2,578 feet, a production test was made which resulted in a flow of 400 bbls. of 27 gravity oil per day for several days. The well is now drilling ahead in search of additional oil sand and it seems fairly certain that a large production, possibly corresponding to the wells in the Ventura Avenue Field, will be developed at a moderate depth. This well is correlating structurally higher than the shore wells to the east, thus confirming the theory that the original shore operations are well down on the plunge of the structure.

There are 11 permit holdings in this area and, if the present well is a success, there will undoubtedly follow an extensive campaign of tideland operations.

In the early days of the Seacliff Field, there were originally two tideland wells drilled immediately offsetting the upland producers. The first well was drilled by the Pan American Petroleum Co., later taken over by Richfield, and was completed at a depth of 4,106 feet as a small producer. A second well was drilled just off the edge of the beach on the permit adjoining to the south by the Petroleum Exploration Co. This well was suspended, due to mechanical difficulties, at a depth of 6,640 feet.

Future Production Prospects

As a result of the developments along the coast which have been here outlined, there is now existing the proof of a major productive area in the Elwood Field, a portion of which is covered by State tidelands. There is a fair possibility of substantial production within an area which will be principally confined to State tidelands offsetting the present Seacliff or Rincon oil field. The Capitan area has been proven for a small production of heavy oil and it is possible that a limited area here within the State tidelands will yield small producers which, at some later date, may be of commercial value. The same is true of the Summerland area. However, in their case, it is doubtful that the possible production will justify the cost of extensive off-shore operations. The More Ranch area, due to its unusual gas showings, remains as a possible oil prospect when the key to the complicated structure is solved. The same is true of the Carpinteria area where the first off-shore well is now drilling.

It is possible that in the end the State tidelands which are now under lease or permit will yield a total production of 50,000,000 to 100,000,000 bbls., the principal portion of which will probably come from the Elwood Field. The result will be a royalty to the State of California of one-twentieth of this total production and it will remain to be seen whether the venture into the oil business on the part of the State was worthwhile.

Exposure of a recent overthrust fault in Carpinteria area wherein middle Miocene shales are thrust up over recent dune sands. This fault strikes into the Carpinteria shore line area and belongs to a series of faults which probably dominates the oil possibilities here.

CALIFORNIA SOLVES ITS WASTE WATER PUZZLE

(Continued from Page 136)

tally the problems are the same. The separating plant of Santa Fe Springs Waste Water Disposal Co. includes several features borrowed from the design of refinery separators. The separator is 100 feet wide and 162 feet long, constructed of reinforced concrete. It is divided by a longitudinal wall into two parallel units, so that if desired, one can be shut down for repairs or alteration while the other is in use.

To provide the desired preliminary agitation and turbulence previously discussed a device similar to a condenser cooling tower was constructed. It receives the water from a trough having outlets one foot apart and extending across the top of the tower for the full width of the separator. The water from the agitating device falls into the preliminary sedimentation chamber which is 12 feet wide at the top, 2 feet wide at the bottom and 12 feet deep. One side of this chamber is formed by the vertical baffle over which the water flows to the mud-collecting compartments while the other side is the sloping end wall of the separator. The bottom of this chamber is provided with outlet valves through which the precipitated

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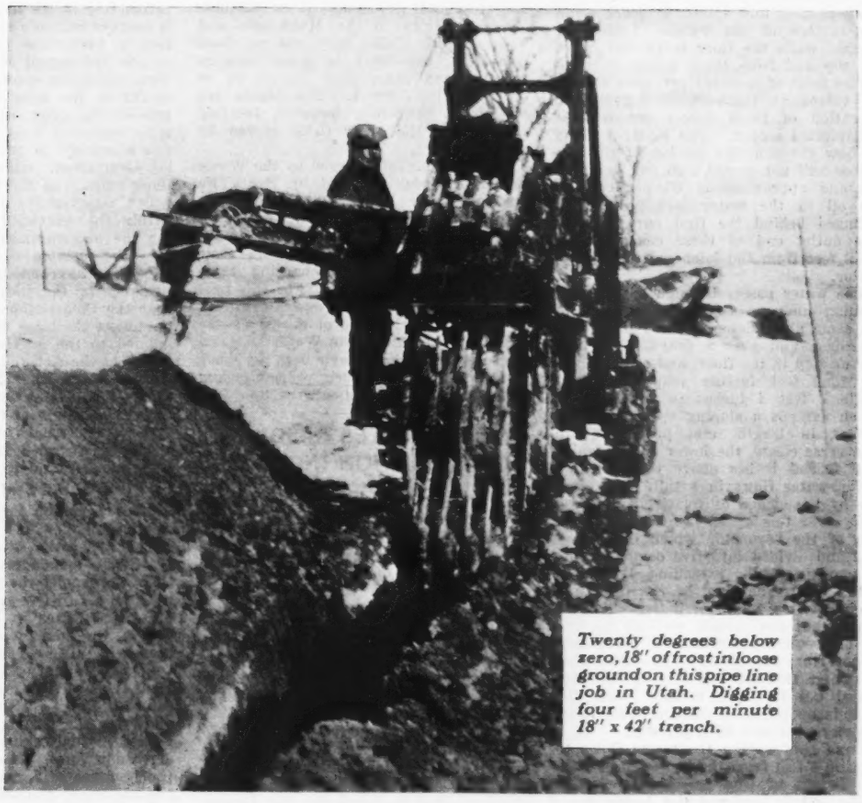

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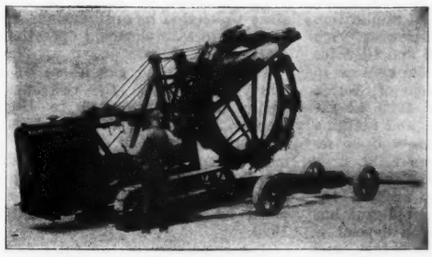

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material can be discharged into pipe lines leading to a mud sump. Most of the sand or other heavy materials are caught in this chamber.

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The next three compartments are divided from each other by two curtain walls extending 5 feet below the top of the separator and 4 feet, 4 inches below the surface of the water. Under the curtain walls the floor is 12 feet below the top and from these points it slopes in the form of inverted pyramids to outlet valves at their apices. Periodical operation of these valves removes the precipitated sludge. The linear velocity of flow through this section of the separator will not exceed 0.25 feet per minute and approximately 95 per cent of the oil in the water is collected and skimmed behind the first curtain wall. The outlet end of these compartments is 72 feet from the inlet end of the separator.

The water passes through a three-foot opening under a third curtain wall of the same dimensions as those previously described, and over a four-foot vertical rise or step in the floor, and after traveling four feet farther reaches a solid baffle 7 feet 4 inches in height, from which extends a sloping apron or ramp 8 feet in length, and provided with transverse cleats, the lower end of which is 6 feet 4 inches above the floor.

The water flows in a thin sheet, broken by the cleats, at relatively high velocity over this apron into the next section of the separator which is 60 feet long and divided into five compartments by curtain walls extending 3 feet 2 inches below the level of the fluid and leaving a flow space of 3 feet 2 inches, except that the curtain wall at the end of this section extends to a point only 1 foot from the floor. The velocity of the water through this section does not exceed 0.6 feet per minute when the plant is operating at its maximum rated capacity of 60,000 bbls. per day.

From this section the water flows to a baffle 4 feet from the last curtain wall. The height of this baffle is 6 feet 4 inches and it performs the double function of fixing the height of the fluid in the last described section of the separator and of forming one wall of the filter compartment.

Bed of Excelsior Filtering Medium

The surface of the filter is 5 feet wide. The filtering medium is a bed of excelsior 4 feet in thickness, supported on a one-half-inch wire mesh screen, which in turn is supported on a slatted wooden rack 1½ feet above the floor of the separator. At the maximum capacity the filtration rate is 3.5 gallons per square foot per minute. The water flows in a downward direction through the filter into a compartment of which one side is the wall of the filter and the other is a baffle 5 feet 10 inches in height. The water flows over the baffle into a narrow compartment from which the water is discharged into the outlet pipe leading to the ocean.

An emergency basin, lined with asphalt 2½ inches thick and having a water surface of approximately three acres and a capacity of 180,000 bbls., was constructed near the separator. Its purpose is to retain the effluent from the separator in case it becomes necessary to shut down the pipe line for repairs. The sludge drawn from the bottom of the preliminary sedimentation chamber and the sludge collecting basins is conveyed through pipe lines to a sludge pit where the water remaining after the sludge has settled is pumped back into the separator inlet.

The water is conveyed to this plant by approximately 12 miles of cast iron, wood stave and vitrified clay pipe lines. The effluent is discharged to the ocean through 15.5 miles of vitrified clay pipe line.

Rigid Rules Established

For the operation of this plant and Waste Water Disposal Co.'s plant, rigid rules were established by the boards of directors of the two companies. One of the rules adopted by both companies is that no rotary mud shall be delivered into the systems. Early in their investigations the engineering committee decided that the disposal of waste water and the disposal of rotary mud are two separate problems which, under the conditions prevailing in the area served, could not be combined.

The cost of construction of the Santa Fe Springs plant and pipe lines was approximately $450,000, and the annual operating cost is estimated at $20,000. The pipe lines to the Montebello and West Coyote Fields have not yet been completed, but work is going steadily forward and these lines should be in operation by June 1. The plants are already in operation, however, treating water from the other fields served by the system.

The oil companies served by the Waste Water Disposal Co. and by Santa Fe Springs Waste Water Disposal Co. are required to remove mud, silt, tank bottoms and any materials which might clog the gravity pipe lines from their waste waters before discharging them into the disposal systems. For this purpose small concrete box separators built on the same principles of design as the Santa Fe Springs Waste Water Disposal Co.'s separator have been built by some of the companies on their properties and these are giving excellent results.

UNITED STATES GASOLINE CONSUMPTION INCREASES

(Continued from Page 235)

having used 1,253,324,000 gallons, an increase of 150,000,000 gallons over the previous year. Ohio ranks second with a consumption of 955,328,000 gallons shown for 1929.

December Consumption

Gasoline consumption in 40 states for the month of December, 1929, as indicated by reports made by wholesalers and dealers in the various states, under provisions of the gasoline tax laws or gasoline inspection laws, totaled 687,233,000 gallons, compared with 649,427,000 gallons in December, 1928, an increase of 37,806,000 gallons, or an increase of 5.8 per cent in daily average. Daily average consumption for December, 1929, was 22,169,000 gallons, compared with a daily average of 24,997,000 gallons in November, 1929, a decrease in daily average during December of 11.3 per cent.

Below are shown the quarterly consumption figures for the periods ended September 30, 1929, December 31, 1929, and December 31, 1928, for the states of California, Montana and Pennsylvania.

The figures giving the quantity of gasoline sold or offered for sale, as reported under various laws, follow. In some cases they are gross figures before deductions allowed for small quantities of gasoline reshipped or sold for other than taxable use, the tax upon which, if paid, is subsequently refunded. All figures are subject to revision.

NEW RULES REGULATING LEASES IN NEW MEXICO

(Continued from Page 237)

relied on so as to limit the time of application and in fact a custom is shown of entertaining applications made within 30 days after expiration, and a notice to relator that he might apply within such time. Whether we consider such custom and notice as evidencing a rule of the office or as evidencing what is a reasonable time within which to make application, in the absence of rule, it results that respondent's first ground for denying the lease is not well taken.

"But it does not follow, from what we have stated, that the lower court erred in refusing the mandamus for which relator applied because the commissioner based his refusal to issue the lease upon a second and further ground—that Section 7 of Chapter 125 of the Laws of 1929 require that the lease should be first put up at auction and that relator could only exercise his preference right by meeting the highest bid made thereat. In this position the commissioner was correct. Assuming that the relator's contention to the effect that he takes his rights from his contract and not from any provision of the Law of 1929 is sound, we find that his contract, by its express terms, entitles him to have and use his preference right to obtain a new lease on the same land 'according to the rules of the State Land Office.' It is not that Section 7 of the Act of 1929 is retroactive in its terms or intent but it is because relator's contract expressly refers to such rules as may be in effect on the 3rd day of May, 1929, that relator's contention cannot be sustained. In so far as the rules of the Land Office provide the price which relator or any other applicant must pay for a new lease and a manner in which that price must be ascertained, relator must abide by those rules, and the fact that Section 7, which requires the auction of all lands within the restricted district, is a rule for the ascertainment of the price, decides the question. . . . The conclusion which we have reached requires the affirmance of the judgment. We assume that the Commissioner will now proceed to subject the lease for which relator has applied to the auction required by Section 7 of the Act and that he will accord to the relator the right to exercise his preference, if he is willing to comply with the requirements of the law.

"The judgment of the lower court should be affirmed and the cause should be remanded, and it is so ordered."

Substitution of New Leases

Another action for a court interpretation of the new law was begun in December when the Atlantic Oil Producing Co. filed a mandamus suit in the district court to compel the Land Commissioner to issue a full five-year lease on land in a restricted area in Lea County instead of for the unexpired term of a lease then held. The old lease expired by limitation on January 23, 1930. The Act of 1929 repealed the law of 1927 and contained a clause in Section 14 which provided for the surrender of old leases in good form and taking out new leases under a new form. The clause provides for the issuance of a new lease "in lieu of" the old lease. In other words, the new act confirmed and recognized the leases made under old laws where they are in good standing and provides for the substitution of new leases in their places. The case was heard by Judge Reed Holloman, at Santa Fe, who held that leaseholders who convert their old leases under Section 14 of the 1929 oil code are entitled to a new lease for a full five-year period. The commissioner had taken the position that the new lease should cover only the unexpired period of the old lease. The case has been appealed to the supreme court.

New Rules Issued

The new rules issued by the Land Commissioner with consideration to the decision in the Malone case are as follows:

The rules are in two sections. The rights to re-lease; and the second rules to govern the original leasing. Briefly the rules governing preferential rights are:

1. No preferential right will be recognized unless application for new lease is filed prior to expiration of the lease on which preference right is being claimed. This rule applies to all lands regardless of whether they are in the restricted district.

2. Where application for preference right is for lands outside the restricted area, lease will be granted in accordance with and conformable to the general rules and regulations applicable to such lands.

3. Where the preferential application is for lands in the restricted area, such application will be received and filed for lease by sealed bids at public auction in accordance with the provisions of Section 8 of the Act of March 12, 1929, at the regular monthly lease sales, and notation will be made that such bids will be received subject to a preference right.

4. Applicant for preferential release may reclaim his land by meeting the highest bid received. The applicant has 10 days in which to make a deposit if notice to him by mail is necessary, and has five days if he was present at the sale.

5. If no bid is received on a tract for which preference right application has been made, the lease will be awarded to the applicant having such preference right as the rates upon the terms specified in the posted notice subject to the discretion of the commissioner of public lands to refuse to issue lease for all or any part of such tract.

A summary of the general rules for leasing follows:

1. Leases will be made on either form 41 or 42 as the commissioner may designate.

2. The minimum first year's rental on any lease shall be $100.

3. Not more than 10,000 acres will be included in any one lease outside the restricted district and not more than 2,560 acres will be included in any one lease within the restricted district, except by special consent and approval of the commissioner.

4. Application fees: $5 for tracts up to 5,000 acres; $10 for tracts over 5,000 acres.

5. Minimum rentals:

District No. 1—Twenty-five cents per acre. District includes Townships 1 to 8 north, Ranges 19 to 37 east; Townships 1 to 3 south, Ranges 19 to 37 east; Townships 4 to 15 south, Ranges 28 to 37 east; Townships 16 to 30 south, Ranges 27 to 29 east; Townships 21 to 26 south, Ranges 26 to 39 east.

District No. 2—Fifteen cents per acre: Townships 16 to 32 north, Ranges 1 to 21 west; Township 14 north, Ranges 8, 9, 10 west; Township 15 north, Ranges 5, 6, 7, 8, 9, 10 west; Townships 11 to 15 north, Ranges 18 to 21 west.

First Annual Rental

The first annual rental shall not be less than the minimum but may be fixed at more by the land commissioner.

All lands not within the above districts shall be subject to minimum of 5 cents an acre subject to statitutory minimum mentioned in Rule 2.

6. Lands within 3 miles of a commercially productive oil or gas well will not be leased except upon sealed bids or public auction except where existing leases are relinquished and application is made for a new lease in lieu of the lease relinquished.

7. No lease shall be made for lands which will not fall within a 50-mile square, but this rule may be waived by the commissioner.

8. Except where lands are leased by sealed bid or public auction time of receipt of application shall determine priority right where there are conflicting applications.

9. Applications must be accompanied by required fees.

10. Where simultaneously applications are filed, issue may be settled by, stipulation or applicants; submission of amended applications; offering lands at auction.

11. Leases will not be issued for selected lands which have not been clear-listed.

12. Pending final construction by the supreme court of the Atlantic Oil Producing Co. vs the Land Commissioner suit for interpretation of Section 14, applications for relinquishment of existing leases will be placed on file to be disposed of in conformity with the court decision.

13. Where applications include lands in districts having different minimum rentals, such lands will be considered as all within the district having the highest charge

* * * * *

15. A bond of $2,000 to guarantee state protection against damage must be posted before development operations may start.

16. No oil and gas leases upon any state lands within the restricted area comprising Townships 1 to 10 south, Ranges 34 to 38 east; Townships 11 to 20 south, Ranges 26 to 39 east, will be made except upon competitive bidding by sealed bids or public auction except upon relinquishment of existing leases as provided by the act approved March 12, 1929.

The remainder of the rules consist of details regarding the method of conducting public auctions on the tenth day of each month.

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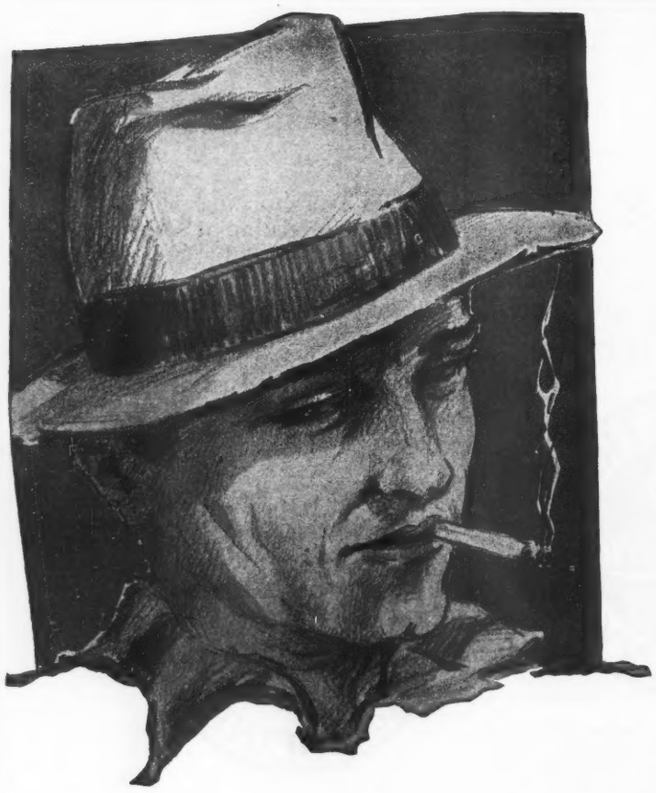
Magnolia Petroleum Company

General Offices: Dallas, Texas



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THE ANDREWS STEEL CO.
NEWPORT ASCO KENTUCKY

USE OF LIQUEFIED GAS ON THE WEST COAST

(Continued from Page 126)

enough liquid to supply gas to an average stove burner for approximately 300 hours. It is estimated that this would be sufficient to care for the cooking requirements of a family of four or five people for a period of more than a month, depending, of course, upon the usage. Many families have used from the same cylinder for considerably longer periods. It is estimated that the cost is less than 3 cents per burner hour for cooking purposes in the State of California.

Standard Flamo is clean, free from water and other foreign matter. The individual household set with its individual regulator unit insures a constant pressure at the customer's appliance equivalent to a 10-inch water column. Therefore, this home gas plant furnishes all of the conveniences of city gas. The pressure in the tanks is no greater than the pressure of natural gas frequently retained in storage tanks for city distribution. A safety device in the form of a mercury seal provides a protection so that at no time will the pressure ever exceed one pound in the supply lines to the gas appliance in the home.

The pressure served to the appliance from Standard Flamo equipment is approximately the same as city gas and it should be understood that Standard Flamo as delivered to the appliance is entirely a dry gas and not a liquid.

Data on Gas

The following is a table which gives the approximate characteristics of Standard Flamo, together with certain comparative data relative to its fuel value, with regard to other standard fuels:

Liquid—	
Specific gravity	.52 degrees
A.P.I. gravity	140.0 degrees
One gallon	4.35 pounds
Specific gravity gas (air equals 1)	1.50
One pound Flamo	8.5 ft. gas (Flamo)
One gallon Flamo	37.0 ft. gas (Flamo)
One cylinder	780.0 ft. gas (Flamo)

Heating Value Flamo

	B.t.u.
One pound	21,500
One gallon (liquid)	93,500
One cubic foot (gas)	2,550

Note—One pound Flamo equals approximately 39 cubic feet (550 B.t.u.) manufactured gas. One pound Flamo equals approximately 6.3 kilowatt hours electricity (one kilowatt hour equals 3,415 B.t.u.). One gallon Flamo equals approximately 160 cubic feet (550 B.t.u.) manufactured gas. One gallon Flamo equals approximately 29 kilowatt hours electricity (one kilowatt hour equals 3,415 B.t.u.); 25.6 pounds Flamo equals approximately 1,000 cubic feet (550 B.t.u.) manufactured gas.

Sales Methods

In the marketing of Standard Flamo, the stove dealer signs an agreement and simply has a set on his floor for demonstration purposes only. He does not sell the product, but derives his profit from the sale of gas appliances approved for this new liquefied petroleum gas.

The ultimate users are solicited on the basis of "permanent customer" who may secure the installation of a Standard Flamo set for a maintenance and upkeep charge of $38 cash, or on a budget plan of $3.80 down and $2 a month for 18 months.

"Part-time customers" such as those maintaining summer cottages that are used but one or two months in a year purchase the Flamo equipment outright, with the exception of the cylinders which, at all times, remain the property of the Standard Oil Co. of California as their shipping containers.

The company insists that the product be used only in approved appliances. While Standard Flamo will burn in any type of gas stove, the quantity consumed in other than approved liquefied petroleum gas appliances would be prohibitive and the householder would be inclined to lay the blame upon Standard Flamo rather than upon the fact that the wrong type of appliance was being utilized. On the other hand, when a set is satisfactorily installed, it invariably results in the sale of several other sets in the neighborhood. For this reason, the

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"PARMACO" Combination WALL and ANCHOR PACKERS"

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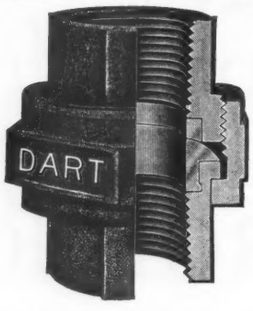

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See Classified Wants on Pages 192-193

Standard Oil Co. of California is insistent that stove manufacturers produce the right equipment and the stove dealers sell and properly connect up equipment adapted for this new gas for the future welfare of the oil industry, equipment manufacturer and the householder.

There is a very large available business throughout the suburban sections and rural districts, and people readily change from solid fuels, with their attendant drudgery, to this new modern gas which is considered an ideal fuel on account of its convenience, speed, safety, cleanliness, lack of odor, economy and simplicity. The Standard Oil Co. of California makes all exchanges of cylinders —picking up empties and replacing with filled cylinders whenever notified by the householder. This is accomplished by their regular delivery men, and the product is simply considered one more item in their already full and complete line of petroleum products.

Many thousands of householders living beyond the gas mains of the public utilities companies are welcoming this new and convenient accessory to the modern rural and suburban home.

CALIFORNIA MAY YIELD EIGHT BILLION BARRELS

(Continued from Page 124)

we have not carried on. Today, we do not know 20 per cent of what we should know, considering our unrivaled opportunities. When we wish to find out about a district, we read a bulletin 20 years old, instead of going out and doing the work ourselves.

Eastern oil companies, on the other hand, come to California with the idea that there is still something to be learned about California geology. They bring out eastern geologists who have learned their trade in a region more difficult than we can conceive of, and to whom our beautiful California sections are a vacation. They mix with these the more liberal-minded local geologists, and then start research work.

Eastern Geologists Perplexed

The eastern geologists are perplexed by our happy practice of changing the name of the Miocene formation every time it crosses a river or a road. So instead of using our hundred and one local names, they use a standard column for the State which will enable them to watch the gradation from basin to basin. The result is that sooner or later they discover an oil field on an anticline which is not marked by a red line in any bulletin.

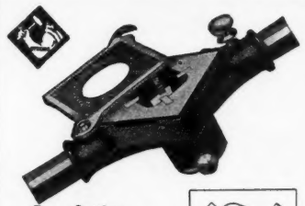
It will do us in California no good to ignore these features, and pretend that they do not exist. The old idea that the eastern geologist is at a disadvantage out here is a myth. He actually has an advantage, because he comes here free from our accumulated prejudices. The writer has gone into the field with three different eastern geologists, and has come back with the old idea badly jolted. We will be lucky to keep our shirts if those fellows continue coming out here.

Although it is true that much of our present danger of overproduction has resulted from new fields recently opened here by eastern interests, our California companies are on the way to regain some of the lost ground. There has lately been an awakening, and various of our local companies are undertaking extensive geologic investigations which may enable them to compete with the eastern interests.

Imports Nullify Proration

We have had for many years too much oil in California, and have lately added several billion additional proven barrels to the surplus. The general outlook is not encouraging. Inglewood alone, if drilled deeper, could probably spoil California markets for a year. Kettleman Hills could perhaps wreck world markets for five. Half of San Joaquin Basin is still unprospected.

Our increasing national reserves, in combination with a flood of foreign oil, have brought about a critical situation in the oil industry. Small producers are being forced to the wall, small wells which should be kept pumping are be-



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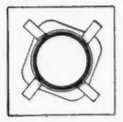

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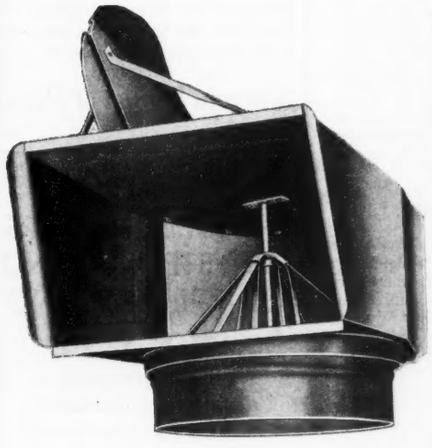

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APPRAISALS
REPORTS-COMMERCIAL & TAX

SURVEYS
ESTIMATES OF OIL RESERVES

AN EXPERIENCED OIL FIELD ORGANIZATION

coming idle or abandoned, and thousands of oil workers are out of work and their families suffering. Depressed oil securities have added to the general financial crisis.

Proration is commendable in this emergency. But do the participants stop to consider that nearly every barrel they pinch in makes room for one more barrel of cheap foreign oil? We are beginning to see that our problem is not so much one of national overproduction, as it is one of uncontrolled importation.

The basic question of whether free-trade or protection is the correct principle cannot be here discussed. But if we assume protection to be correct, then present conditions indicate that petroleum should head the list.

Gasoline is already so cheap that the public is indifferent to any change. The situation therefore resolves itself into the interests of thousands of American producers and a hundred thousand workers, against the interests of about half a dozen large foreign producers. It may be wondered why these few foreign interests so far seem to have the upper hand.

New Estimates Needed

The writer considers the basic reason for past uncontrolled importation to be the unconscious comfort given foreign interests by the United States Geological Survey. Few congressmen know anything about oil. When oil questions come up, the logical place for them to secure technical information is at the survey.

Unfortunately, the Geological Survey long ago committed itself to a belief in untimely oil exhaustion, and has not officially repudiated this opinion. Since it is the most powerful factor in American geology, this inaction forms an almost impassable barrier to the presentation of new and more correct data to Congress. For a congressman to base our oil reserves on past estimates of the survey, is like estimating the 1930 demand for gasoline on the number of automobiles manufactured in 1910.

The United States Geological Survey is the world's greatest geological institution. It is the largest geologic university. It is our pride, and our hope. Its procrastination in this matter therefore wounds us in a very quick place.

The writer considers that the survey owes the people three things: (1) An unequivocal official statement that its previous estimates of oil reserves based on the then available information are too low, incorrect, and obsolete. (2) A conditioned official statement that an oversupply of petroleum exists, and that there are indications that this oversupply may continue for a number of years. (3) A new and comprehensive estimate of our proven and prospective oil reserves which will be more in line with present information.

WEST TEXAS GEOLOGISTS

MIDLAND, Tex., Mar. 8.—The West Texas Geological Society, headquarters at San Angelo, held its monthly meeting at the Scharbauer Hotel, Midland. A paper on the Hendricks Pool, Winkler County, prepared by A. L. Ackers, A. R. DeChicchis and R. H. Smith, of the Southern Crude Oil Purchasing Co., at Midland, was read at the meeting. The members discussed an invitation to meet with the American Association of Petroleum Geologists and the American Institute of Mining and Metallurgical Engineers when regional bodies of those organizations hold a joint session in El Paso, October 13. Robert E. Rettger, district geologist for the Sun Oil Co. at San Angelo is president of the West Texas Geological Society.

STEKOLL BUYS GOLDELLINE

All properties of the Goldelline Oil Corp. in Hutchison County, Texas, were acquired by Harry Stekoll of Tulsa in a deal completed late in February, involving 960 acres. Nine wells on the property are producing approximately 200 bbls. per day. The Pantex Oil Co., also operating in Hutchison County, was bought by Stekoll in 1929.

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July 7 to August 23, 1930

This Summer Session is given especially for students who wish to make up work or to secure additional credits. All work is conducted by the regular Faculty of the School of Mines. For Catalog of the Summer Session, write to the Registrar for Booklet W.

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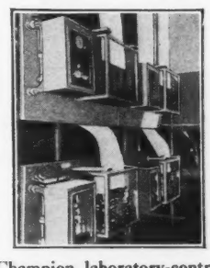
GUARD AGAINST BREAKDOWNS



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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS
Pipe Line Statement for January

Runs

Company—	Month (bbls.)	Dly. av. (bbls.)
Prairie P. L. Co.*	4,247,000	137,000
Gulf P. L. Co.	1,684,338	54,333
Texas P. L. Co.	784,220	25,297
Empire P. L. Co.	1,749,845	56,447
Magnolia P. L. Co.	1,925,246	62,105
Cosden P. L. Co.	667,159	21,521
Sinclair P. L. Co.*	3,193,000	103,000
Oklahoma P. L. Co.	3,429,885	110,641
Other lines*	6,395,300	206,300
Total January	24,075,993	776,644
Total December	23,650,520	762,920
Difference	425,473	13,724

Shipments

Prairie P. L. Co.†	6,257,644	201,859
Gulf P. L. Co.	1,955,518	63,081
Texas P. L. Co.	1,151,267	37,138
Empire P. L. Co.	1,373,119	44,294
Magnolia P. L. Co.	2,041,029	65,840
Cosden P. L. Co.	786,124	25,359
Sinclair P. L. Co.†	3,465,366	111,786
Oklahoma P. L. Co.	3,552,327	114,591
Other lines*	6,696,000	216,000
Total January	27,278,394	879,948
Total December	27,079,969	873,546
Difference	198,425	6,402

Stocks

Prairie O. & G. Co.*	40,194,000
Gulf P. L. and Gypsy Oil Co.	9,667,678
The Texas Company	6,658,163
Empire P. L. Co.	6,562,069
Cosden P. L. Co.	3,683,240
Sinclair Crude Oil Pur. Co.	19,678,000
Magnolia Pet. Co.	7,577,975
Oklahoma P. L. Co.	3,554,219
Carter Oil Co.	9,271,431
Other lines*	22,511,000
Total January	129,357,775
Total December	130,257,108
Difference	899,332

*Estimated. †Prairie and Sinclair shipments include Texas crude oil.

EASTERN PIPE LINE REPORT FOR MONTH OF JANUARY

Runs from Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Indiana and Michigan for December and January:

	Dec., '22	Jan., '30
Nat. Transit	451,222.47	439,729.00
S. W. Pa. P. L.	86,078.43	90,898.30
Eureka P. L.	364,779.55	367,547.89
Buckeye P. L. (Macksburg)	352,447.91	358,430.62
Buckeye P. L. (Cleveland)	9,993.96	10,647.91
Buckeye P. L. (Lima, etc.)	90,018.07	85,676.96
Indiana P. L.	4,720.28	3,482.83
Cumberland P. L.	189,528.30	182,383.51
N. Y. Transit	34,104.38	37,659.17
Tidewater P. L.	25,495.45	24,115.65
Pure Oil	277,181.96	305,214.10
Paragon Dev.	11,059.01	10,541.45
Stoll Oil Ref.	4,362.88	3,899.80
Bradford Trans.	410,395.25	432,916.17
Total	2,311,387.90	2,353,143.36
Daily average	74,560.90	75,907.85

Note—Paragon Refining Co. had other receipts of 156,022.98 bbls. Paragon Development had other receipts of 194.62 bbls. Indian Refining Co. had other receipts of 448,345.12 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for December and January:

	Dec., '29	Jan., '30
Nat. Transit	596,904.16	566,559.42
S. W. Pa. P. L.	328,907.79	292,868.36
Eureka P. L.	217,339.67	261,587.52
Buckeye P. L. (Macksburg)	209,875.38	188,277.50
Buckeye P. L. (Cleveland)	1,700.86	2,188.64
Buckeye P. L. (Lima, etc.)	895,636.25	900,037.30
Indiana P. L.	1,426,181.84	1,549,996.22
Cumberland P. L.	222,397.86	238,821.39
Southern P. L.	65,068.35	62,196.22
N. Y. Transit	164,584.79	189,945.65
Northern P. L.	201,259.03	196,645.06
Tidewater P. L.	510,717.25	392,513.08
Pure Oil	281,593.22	270,432.99
Paragon Ref.	172,635.39	157,344.28
Indian Ref.	.....	461,663.58
Paragon Dev.	10,374.82	10,643.37
Bradford Trans.	468,781.60	486,905.56
Tuscarora Oil	.....	517,121.55
Total	5,773,978.26	6,746,341.69
Daily average	186,257.36	217,623.92

Indian Refining Co. reported other deliveries of 461,663.58 bbls.

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of December and January:

	Dec., '29	Jan., '30
Nat. Transit	703,855.97	787,014.24
S. W. Pa. P. L.	531,541.47	511,042.96
Eureka P. L.	1,514,703.17	1,427,435.53
Buckeye P. L. (Macksburg)	476,862.16	609,936.03
Buckeye P. L. (Cleveland)	70,466.79	85,063.78
Buckeye P. L. (Lima, etc.)	4,286,296.85	4,764,964.92
Indiana P. L.	652,701.92	742,902.49
Cumberland P. L.	523,373.23	470,501.33
Southern P. L.	323,184.71	316,573.11
N. Y. Transit	216,820.01	310,237.52
Northern P. L.	437,683.50	569,978.67
Tidewater P. L.	868,271.09	915,732.49
Pure Oil	22,924.46	64,343.78
Paragon Ref.	31,470.68	29,271.88
Indian Ref.	156,562.07	142,994.08
Paragon Dev.	6,037.00	6,142.46
Tuscarora	267,197.45	266,285.45
Bradford Trans.	164,000.93	199,625.21
Total	11,253,953.46	12,220,045.93
Increase	.....	966,092.47

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern Pipe Lines at the close of December and January showing gross stocks of the above fields:

	Dec., 1929	Jan., 1930
Penna.	3,454,908.10	3,617,731.86
Lima	628,606.65	687,915.50
Kentucky	625,239.17	540,503.40
Mid-Continent	6,488,845.03	7,267,468.33
Illinois	44,576.48	55,156.42
Michigan	11,778.03	51,270.42
Total	11,253,953.46	12,220,045.93

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil field for the past four years:

	1927	1928	1929	1930
Jan.	56,209	52,904	51,749	75,907
Feb.	61,298	57,002	51,833	.....
Mar.	63,247	57,485	54,252	.....
Apr.	60,927	56,812	58,444	.....
May	60,284	62,067	59,902	.....
June	62,767	58,230	58,833	.....
July	58,674	57,144	66,087	.....
Aug.	60,870	57,745	66,087	.....
Sept.	60,285	53,487	67,315	.....
Oct.	147,080	58,100	76,093	.....
Nov.	57,275	53,865	74,831	.....
Dec.	53,089	52,025	74,561	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1927	1928	1929	1930
Jan.	141,227	146,465	165,721	217,623
Feb.	138,534	167,368	159,387	.....
Mar.	133,777	158,883	161,474	.....
Apr.	140,227	172,935	169,737	.....
May	144,594	180,559	184,281	.....
June	149,772	188,024	185,404	.....
July	151,850	189,470	194,763	.....
Aug.	188,653	192,853	184,946	.....
Sept.	144,213	194,138	201,214	.....
Oct.	147,036	176,000	191,367	.....
Nov.	150,975	176,898	202,743	.....
Dec.	144,504	173,572	186,257	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1928	1929	1930
Jan.	12,276,710	7,596,564	12,220,045
Feb.	12,180,419	8,738,835	.....
Mar.	12,239,725	9,002,058	.....
Apr.	11,740,125	8,978,172	.....
May	11,602,468	8,903,560	.....
June	11,287,678	8,921,275	.....
July	10,819,331	9,211,595	.....
Aug.	10,236,743	9,440,643	.....
Sept.	9,660,910	9,443,067	.....
Oct.	9,229,709	9,441,101	.....
Nov.	8,366,553	9,868,538	.....
Dec.	7,539,555	11,253,953	.....

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Feb. 1	2,368,730.24
Runs from wells	519,272.30
Other receipts	343,257.16
Regular deliveries	474,902.13
Other deliveries	449,109.92

The amount of Illinois oil run by the Tide Water Pipe Co. in January was 24,-115.65 bbls. Deliveries were 23,391.80. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1930—	Runs	Deliveries
Jan.	543,387.95	498,293.92
1929—		
Jan.	570,727.38	545,084.66
Feb.	517,320.17	503,387.70
Mar.	728,319.67	586,049.60
Apr.	515,374.27	654,297.96
May	608,981.60	673,812.83
June	568,454.70	518,845.97
July	611,106.79	528,159.44
Aug.	625,351.99	746,425.06
Sept.	582,457.66	669,947.72
Oct.	662,302.83	553,558.68
Nov.	565,108.75	427,064.63

Tide Water Pipe Co., Ltd., also delivered in January, 99,499.88 bbls. Oklahoma oil.

Franklin Pipe Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1928—	Runs	Shipments	Stocks
December	3,053.60	3,167.53	19,426.99
1929—			
January	2,099.90	.....	19,313.06
February	2,469.47	6,873.20	17,009.23
March	3,330.82	3,595.01	16,745.04
April	4,864.07	4,243.59	17,365.52
May	2,688.59	2,455.54	17,598.57
July	2,947.62	3,329.35	4,503.48
August	2,742.72	2,889.47	4,356.74
September	2,925.71	2,897.34	4,385.11
October	3,083.59	1,754.94	5,713.76

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
April	16,667	....	32,333	13,233	2,234	64,467	.....	.....	.....	.....	7,333	65,300
May	16,226	2,416	31,326	10,806	2,129	62,903	.....	.....	.....	.....	....	62,903
June	14,866	3,167	23,100	10,300	6,100	57,533	.....	.....	.....	.....	.....	57,533
July	15,387	4,806	34,290	19,388	2,452	76,323	.....	.....	.....	.....	4,161	80,484
August	20,389	3,129	35,226	18,903	5,548	83,194	.....	.....	.....	.....	12,161	95,355
September	19,433	....	31,834	11,900	6,200	69,367	.....	.....	.....	.....	4,800	74,167
October	9,065	4,677	42,065	12,000	9,677	77,484	.....	.....	.....	.....	4,097	81,581
November	18,900	3,167	41,667	14,699	3,767	82,200	.....	.....	.....	.....	2,400	84,600
December	12,968	....	46,129	13,613	7,225	79,935	.....	.....	.....	.....	2,335	82,290
January	18,484	1,936	34,257	22,323	9,516	86,516	.....	.....	.....	.....	2,258	88,774

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
April	19,733	18,367	137,233	50,267	22,567	248,167	6,867	25,066	10,367	1,500	43,800	291,967
May	29,806	19,258	138,000	49,936	22,322	259,322	6,677	26,323	3,000	1,323	37,323	296,645
June	31,433	8,667	134,600	42,967	18,300	235,967	8,600	22,633	11,800	2,033	45,066	281,033
July	40,097	15,129	111,677	43,420	31,516	241,839	4,774	12,097	9,516	161	26,548	268,387
August	33,387	14,355	162,644	30,936	20,355	261,677	4,226	12,742	....	1,484	18,452	280,129
September	32,967	9,000	136,633	54,300	32,900	265,800	6,900	22,900	5,367	1,333	36,500	302,300
October	39,936	10,519	137,096	38,160	38,644	264,355	6,613	13,388	11,064	4,419	35,484	299,839
November	23,633	18,900	125,200	41,100	28,200	237,033	2,233	12,533	6,667	2,500	23,933	260,966
December	29,774	15,387	133,742	31,000	23,775	233,678	5,548	16,484	6,613	1,774	30,419	264,097
January	21,161	10,678	134,581	38,677	43,806	248,903	4,322	6,453	....	548	11,323	260,226

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

1929-30—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
February:	Month	22,300,707	20,464,164	20,816,209	2,557,968	2,154,194	1,569,930	1,965,656	3,113,000	74,941,828
	Daily average	796,454	730,863	743,484	91,356	76,936	56,068	70,202	111,184	2,676,494
March:	Month	24,324,729	20,838,262	24,358,592	2,951,076	2,303,734	1,756,153	2,195,823	3,586,000	82,314,369
	Daily average	784,669	672,202	785,761	95,196	74,314	56,650	70,838	115,677	2,655,302
April:	Month	23,295,060	20,235,390	23,493,097	3,112,740	2,188,680	1,702,497	2,085,030	3,524,000	79,636,494
	Daily average	776,502	674,513	783,102	103,758	72,956	56,750	69,501	117,467	2,654,550
May:	Month	24,053,351	21,345,453	24,489,101	3,665,099	2,220,158	1,713,261	2,252,522	3,879,000	83,617,945
	Daily average	775,915	688,563	789,965	118,229	71,618	55,267	72,262	125,129	2,697,353
June:	Month	24,624,627	20,561,112	24,698,029	3,636,150	2,112,270	1,699,581	2,180,752	3,887,000	83,399,521
	Daily average	820,821	685,371	823,267	121,205	70,337	56,653	72,692	129,567	2,779,984
July:	Month	26,796,627	22,371,925	26,969,989	3,867,157	2,137,047	1,716,488	2,360,836	4,439,000	90,659,069
	Daily average	864,407	721,675	869,997	124,747	68,937	55,370	76,156	143,200	2,924,486
August:	Month	27,233,353	22,429,522	27,491,362	3,816,555	2,036,083	1,764,973	2,478,016	4,363,000	91,662,864
	Daily average	878,495	723,532	886,818	123,115	67,298	56,934	79,936	140,742	2,956,866
September:	Month	26,104,264	21,299,490	26,067,065	3,780,690	1,959,720	1,718,250	2,347,020	4,075,000	87,351,499
	Daily average	870,142	709,983	868,902	126,023	65,324	57,275	78,234	135,917	2,911,716
October:	Month	26,895,160	20,821,646	26,412,167	3,429,468	2,000,027	1,956,326	2,392,952	4,482,000	88,389,746
	Daily average	867,586	671,666	852,004	110,628	64,517	63,107	77,192	141,358	2,851,282
November:	Month	21,317,540	19,193,760	24,896,034	3,430,560	1,911,060	1,853,565	2,350,110	4,029,000	78,981,629
	Daily average	710,585	639,798	829,868	114,352	63,702	61,785	78,337	134,300	2,632,720
December:	Month	21,705,554	20,092,876	25,609,823	3,549,066	1,917,071	1,878,352	2,378,754	4,168,100	81,299,596
	Daily average	700,179	648,156	818,394	114,486	61,841	60,592	76,734	134,455	2,622,568
January:	Month	21,983,242	20,802,984	25,284,352	3,273,197	1,817,685	1,780,969	2,151,090	4,216,000	81,309,519
	Daily average	709,137	671,064	815,624	105,587	58,635	57,451	69,390	136,000	2,622,888
Total 12 months		290,634,214	250,456,584	300,585,820	41,069,726	24,807,729	21,110,345	27,138,861	47,761,100	1,003,564,079

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